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PAPER TRADE JOURNAL

THE INTERNATIONAL WEEKLY OF THE PAPER AND ALLIED INDUSTRY

ESTABLISHED IN 1872

Vol. LXXV. No. 21 NEW YORK AND CHICAGO, NOVEMBER 23, 1922

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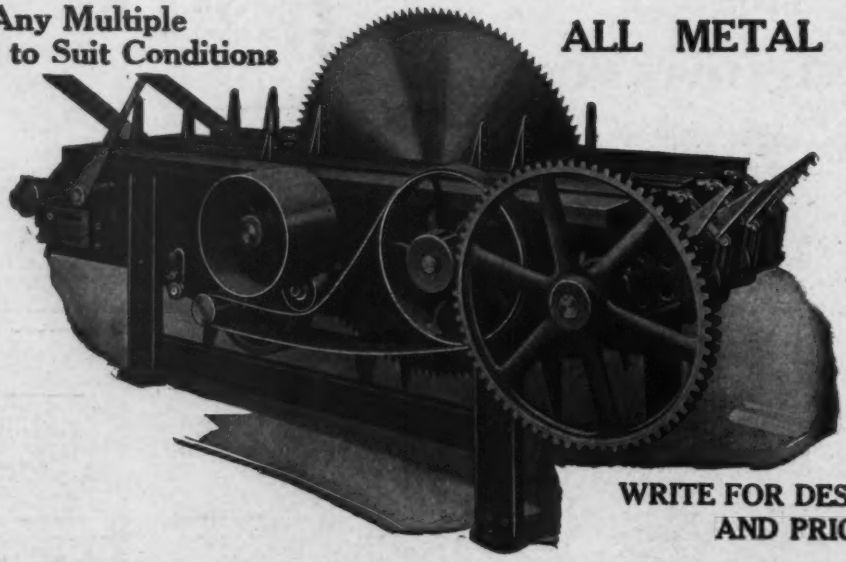
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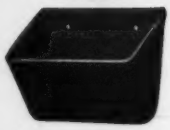

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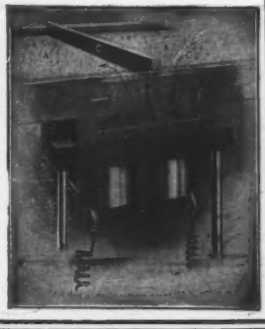

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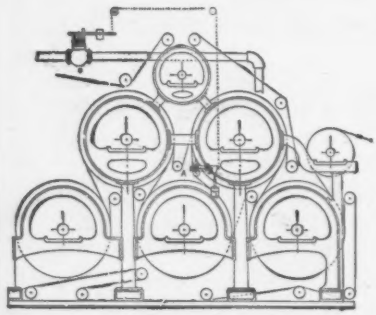

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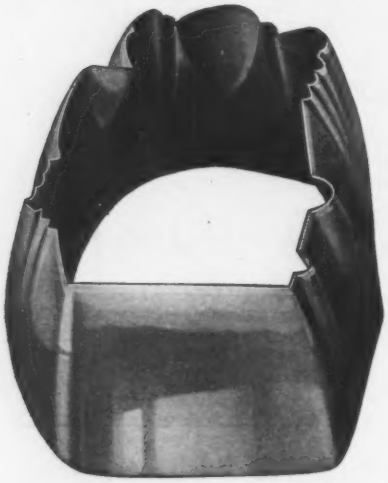

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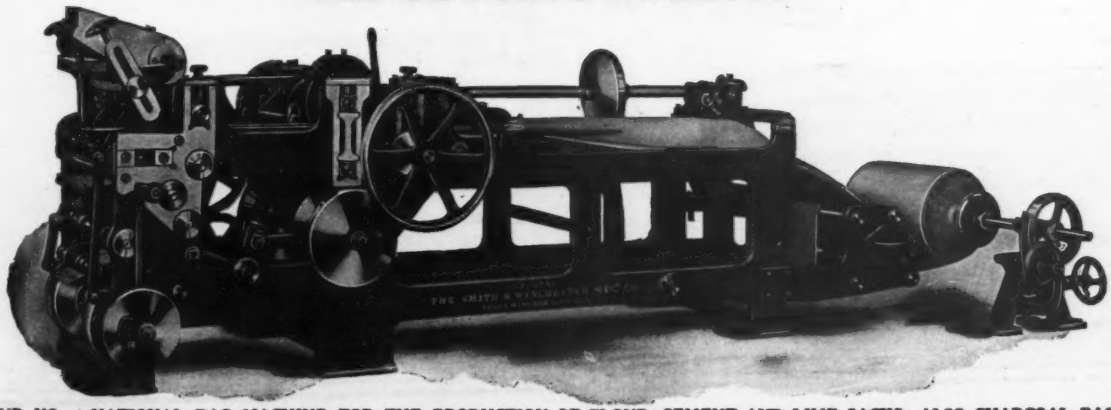

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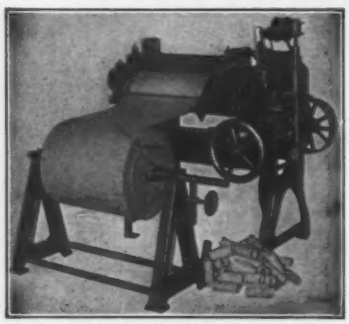

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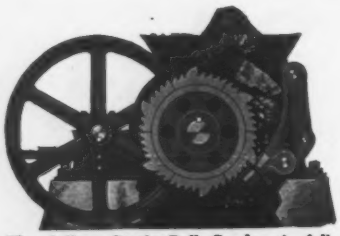

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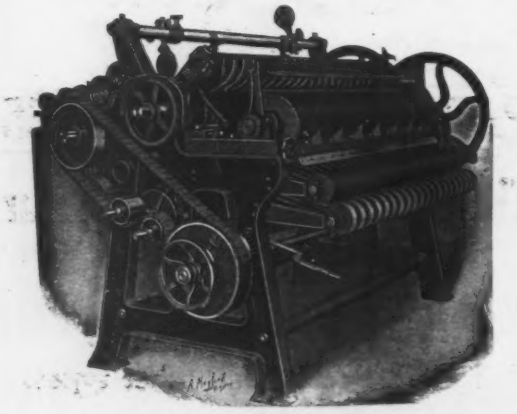

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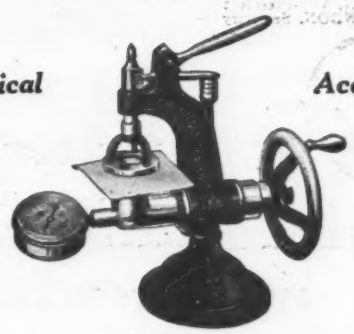

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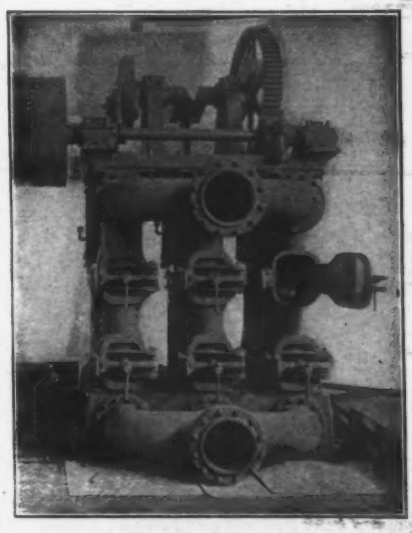

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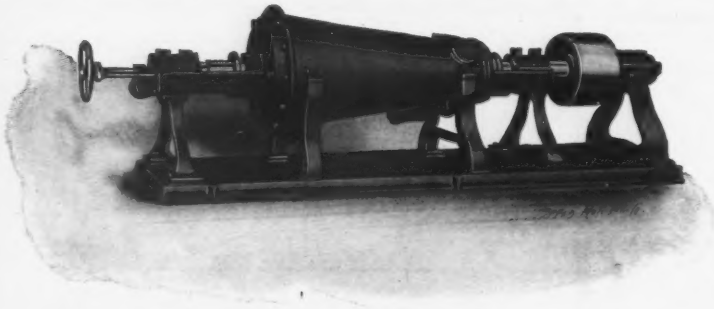

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CONNECTICUT VALLEY SUPERINTENDENTS MEET

New Division of the American Pulp and Paper Mill Superintendents' Association is Formed at Holyoke Under Auspicious Circumstances—John J. White, Gen. Mgr. of the Whitmore Mfg. Co. of Holyoke is Elected Chairman of the New Division—Inspiring Address as to the Value of the Superintendents' Association Are Made by National President O'Connell and Others.

HOLYOKE, Mass., November 20, 1922.—Another step in the progress of the American Pulp and Paper Mill Superintendents' Association was taken here on Saturday when the Connecticut Valley Division was formed at the Hotel Nanotuck. From the large attendance of nearly one hundred mill superintendents from Vermont, Massachusetts, New Hampshire, Rhode Island and Connecticut it is evident the Connecticut Valley Division will be the largest division associated with the organization.

F. F. Barstow Acting Chairman

As soon as the registration had been completed the morning session opened with F. F. Barstow of the Falulah Paper Company of Fitchburg, Mass., acting as chairman. Mayor J. P. Cronin of Holyoke welcomed the members to his city, complimenting them on making their initial step in founding the division in the leading paper making section of this country, and handed them the keys of the city to do with as they desired. Response to the Mayor's welcome was made by H. E. Stafford of Knowlton Brothers, Watertown, N. Y. With the opening ceremonies completed, the routine of organizing started by Mr. Borston appointing the following as a nominating committee: R. O. Harper, of B. D. Rising Paper Company; Arthur Lowe, of West Dudley Paper Company; George Rayner, of St. Georges Paper Company; Forbes Wood, Tait & Sons Paper Company and W. H. Crope, of Esleeck Manufacturing Company.

Address by E. T. A. Coughlin

While this committee was debating on the selection of officers Edw. T. A. Coughlin, a former Holyoke resident, now Technical Director of the Allied Paper Mills of Kalamazoo addressed the members on Association Work. Mr. Coughlin spoke of the great value to be derived through the co-operation of all superintendents and the benefits accruing not only to themselves individually but to the industry as a whole. He compared conditions in the industry ten years ago when there was no superintendents' association and those of the present day, especially in the West where since the forming of the association, men get together at their monthly meetings and help to solve each other's manufacturing problems He assured his audience that progress in the industry was largely dependent on the value of a superintendent's services to his employer and this can best be brought about through association work.

Officers of the New Division

The nominating committee reported the following as its selection of officers for the ensuing year: Division Chairman, John J. White, General Manager of Whitmore Manufacturing Company, Holyoke, Mass.; 1st Vice Chairman, J. E. Madore of American Writing Paper Company, Holyoke; 2nd Vice Chairman, George Hancock of Robert Gair Company, New London, Conn.; 3rd Vice Chairman, Thomas T. Rogan of Fitchburg Paper Company, Fitchburg, Mass.; Treasurer, John Kennedy of Crocker-McElwain Company, Holyoke, Mass., and Secretary, Bert Kent of Paper Makers' Chemical Company, Holyoke, Mass.

National President O'Connell Addresses Meeting

Before the closing of the morning session the members were greeted by John H. O'Connell, president of the National Association and Superintendent of the Diana Paper of Harrisville, N. Y., who addressed them during the lunch hour. Mr. O'Connell who is recovering from a serious accident, received while attending repairs at his mill, which threatened the loss of a leg, spoke of the foundation of the association and the principles which were back of it. He impressed those present with the fact that it was not a "Superintendents' Union" and would never be conducted along Union lines. He emphasized the fact that many manufacturing problems confronted every superintendent today due to the introduction of the rotary press in printing, which were little thought of ten years ago. It was for the purpose of overcoming these difficulties that the Association idea was developed and the beneficial results thus far obtained is convincing proof that the paper and pulp mill superintendents can best serve the interests of their employers and the industry as a whole, by being members of an organization where questions of complicated manufacture can be freely discussed.

Mr. Stafford Presided at Afternoon Session

Immediately the luncheon was over, the afternoon session opened with Mr. Stafford in the chair as the newly elected chairman, Mr. White, was detained at his mill through business engagements. The following subjects were discussed during the afternoon session:

"Mill Management Problems," by Robert B. Wolf of the Robert B. Wolf Company, New York City.

"Curling of Paper," by H. Hackett, Eastern Manufacturing Company, South Brewer, Me.

"Co-Ordination of Expense Items in Preparing Departmental Budgets," by Mr. J. A. Reilly, American Writing Paper Co., Holyoke, Mass.

"Economics of Lighting in Pulp and Paper Mills," by J. H. Kurlander, Edison Lamp Works, Harrison, N. J.

Promptly at four o'clock automobiles were waiting to take the visitors on an inspection tour among the various local mills, the return to the hotel being in time for the banquet at seven o'clock.

Among those present were:

Banquet Is Well Attended

More than 120 delegates and people interested in the paper industry, were present at the sumptuous banquet held in the large ball room of the Hotel Nonotuck last Saturday night. John J. White, treasurer and manager of the Whitmore Manufacturing Company of Holyoke, Mass., was toastmaster of the evening.

The first speaker of the event was E. T. Coughlin of the Allied Paper Mills of Kalamazoo, Mich. He made a strong appeal to the superintendents present to join the organization declaring the benefits from such an association were invaluable to the superintendents themselves. The Connecticut Valley, he said, was the last place that the organization had invaded and that in a large measure it was the most important. Holyoke, he said, is a critical point and is the birthplace of the art of paper making.

Address by George A. Galliver

George A. Galliver, president of the American Writing Paper Company was introduced by Toastmaster White. He gave perhaps the most instructive talk of the evening. In all his experience, he added, there were two years he was going to forget, and deemed it wise for every paper manufacturer to forget, were the years of 1920 and 1921. The first, a year of inflation, and the second a year of deflation, were better forgotten. The wise paper maker will go on from where he left off in 1919 and the better business of 1922.

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Co-operation among the men and especially the superintendents with both the men and the employers, was dealt with at length by Mr. Galliver. He said that he never accomplished anything alone. A man amounts to nothing as an individual if he cannot co-operate with others.

The newly formed Connecticut division of the national organization will be of great value to the industry in this section according to Mr. Galliver. "I regard this association as one of the most auspicious things in the business," he said. "We must depend on the superintendents for the best qualities of the papers, we rely upon superintendents that they will fill all requirements."

Other Speakers

George G. Gill, president of the D. C. Gill Paper Company, was the next speaker. He said that the toastmaster, Mr. White, had not asked him to speak, but to talk, but there is a vast difference between the two. The first, he said, meant that you had to say something and the second merely to fill in and kill time. However, he gave a very interesting talk on the growth of the paper industry and his connection with it.

President of the National Organization, J. H. O'Connell, made a most urgent appeal for all the superintendents present to join the organization. Only 18 had signified joining at that time although it is expected that a great many more will join within the next few days.

Those Who Attended

Robert Brown, Deerfield Valley Paper Company, Monroe Bridge, Mass.

Roger McCorkindale, Parsons Paper Company, Hoyoke, Mass.

C. B. Fuller, Jr., G. O. Jenkins Company, Bridgewater, Mass.

Frank W. Dennison, D. F. Crehore & Son, Newton Lower Falls, Mass.

H. J. Farren, S. Y. Beach Paper Company, Seymour, Conn.

Lem. Goerg, Carew Manufacturing Company, South Hadley Falls, Mass.

W. O. Whitaker, Natick Box and Board Company, Natick, Mass.

A. B. Thorpe, Franklin Paper Company, Holyoke, Mass.

Robert P. Stevens, New Haven Board Company, New Haven, Conn.

Stephen W. Smith, Bird & Son, East Walpole, Mass.

S. B. Moore, Union Mill, Bancroft, Mass.

H. Kellogg, Montague Mill, Turners Falls, Mass.

Everett H. Ham, Southworth Company, Mittineague, Mass.

W. S. Fleming, Hampshire Paper Company, South Hadley Falls, Mass.

Maurice Whalen, American Writing Paper Company, Holyoke, Mass.

Seth R. Williams, American Writing Paper Company, Holyoke, Mass.

Harry W. Marden, American Writing Paper Company, Holyoke, Mass.

Henry C. Cassidy, American Writing Paper Company, Holyoke, Mass.

Chas. J. Blackmore, American Writing Paper Company, Holyoke, Mass.

Caleb Bower, American Writing Paper Company, Holyoke, Mass.

E. K. Mansfield, Robt. Gair Company, New London, Conn.

G. H. Hancock, Robt. Gair Company, New London, Conn.

H. H. Hackett, Eastern Manufacturing Company, South Brewer, Me.

Geo. Stephens, E. C. Robertson Company, Ashuelot, N. H.

L. J. Robertson, Claremont Paper Company, Bellows Falls, Vt.

I. Allen, W. F. Robinson Company, Ashuelot, N. H.

Chas. D. Higgins, Blake & Higgins, Bellows Falls, Vt.

B. Larrabee, S. D. Warren Paper Company, Cumberland Mills, Me.

J. F. Colbert, Fitchburg Paper Company, Fitchburg, Mass.

Edward Driscoll, Smith Paper Company, Lee, Mass.

R. B. Livermore, Hollingsworth & Vose Company, West Groton, Mass.

C. N. Mooney, Smith Paper Company, Lee, Mass.

Thos. T. Rogan, Fitchburg Paper Company, Fitchburg, Mass.

F. J. Mooney, Smith Paper Company, Lee, Mass.

E. W. Gibbons, Smith Paper Company, Lee, Mass.

Arthur B. C. Drew, Pairpont Corporation, New Bedford, Mass.

Chas. Champion, Berkshire Hills Paper Company, Adams, Mass.

H. F. Obermans, Hammermill Paper Company, Erie, Pa.

W. S. Lacey, Hammermill Paper Company, Erie, Pa.

F. E. Field, Hinsdale Paper Company, Hinsdale, N. H.

F. F. Barstow, Falulah Paper Company, Fitchburg, Mass.

Forbes Wood, Tait & Sons Paper Company, Bridgeport, Conn.

George Rayner, St. George Paper Company, Norwalk, Conn.

John Johnston, Holyoke, Mass.

H. E. Stafford, Knowlton Brothers, Watertown, N. Y.

C. E. Weed, Fiske Paper Company, Hinsdale, N. H.

E. Coughlin, Allied Paper Mills, Kalamazoo, Mich.

Chas. C. Stewart, Collins Manufacturing Company, North Wilbraham, Mass.

Wm. Dalrymple, Rainbow Paper Company, Windsor, Conn.

Max Fehringer, Kupfer Brothers, Northbridge, Mass.

Arthur Lowe, West Dudley Paper Company, West Dudley, Mass.

Chas. Beebe, Union Talc Company, New York, N. Y.

W. F. Dewey, B. D. Rising Paper Company, Housatonic, Mass.

H. C. Parsons, Keith Paper Company, Turners Falls, Mass.

William Croft, Esleeck Manufacturing Company, Turners Falls.

R. O. Harper, B. D. Rising Paper Company, Housatonic, Mass.

John Leishman, C. H. Dexter Sons, Windsor Locks, Conn.

J. H. Hayes, The Waterbury Felt Company, Skaneateles, N. Y.

J. J. O'Brien, Boston, Mass.

E. Docherty, Holyoke Wire Cloth Company, Holyoke, Mass.

Chas. J. Guenther, Open Coil Heater Company, Indianapolis, Ind.

John J. Holland, Stone Brothers & Galaup Company, New York.

B. L. Alper, M. S. Alper & Son, Providence, R. I.

H. W. Mack, Shuler & Benninghofer, Hamilton, Ohio.

W. A. Grane, Mangus Chemical Company, Brooklyn, N. Y.

H. W. Reynolds, R. & J. Dick Company, Passaic, N. J.

R. J. Wainwright, Robert Dollar Company, Vancouver, B. C., Canada.

Bert Kent, Paper Makers Chemical Company, Holyoke, Mass.

Geo. Docherty, Holyoke Wire Cloth Company, Holyoke, Mass.

A. A. Tanyane, PAPER TRADE JOURNAL, New York, N. Y.

G. H. Kurlander, Edison Lamp Company, Harrison, N. J.

D. H. Monteville, Shartle Brothers, Middletown, Ohio.

Frank Wilder, Diana Paper Company, Harrisville, N. Y.

J. A. Reilly, American Writing Paper Company, Holyoke, Mass.

M. Kelley, Crocker-McElwain Company, Holyoke, Mass.

J. W. Spicer, American Writing Paper Company, Holyoke, Mass.

Jas. Wright, Newton Paper Company, Holyoke, Mass.

John J. Kennedy, Crocker-McElwain Company, Holyoke, Mass.

W. L. Nixon, Chemical Paper Company, Holyoke, Mass.

R. C. Foster, Carew Manufacturing Company, South Hadley Falls, Mass.

G. W. Mericle, American Writing Paper Company, Holyoke, Mass.

G. A. Tifft, Chemical Paper Company, Holyoke, Mass.

G. H. Spencer, S. K. F. Industries, New York, N. Y.

H. W. Knight, M. Gottesman & Co., New York, N. Y.

J. M. Newton, Roland T. Oakes Company, Mass.

W. J. Fleming, Hampshire Paper Company, South Hadley Falls, Mass.

J. D. McKissick, Carew Manufacturing Company, South Hadley Falls, Mass.

F. F. Dillon, Chemical Paper Company, Holyoke, Mass.

M. N. Arthur, Appleton Woolen Works, Appleton, Wisc.

C. A. Poland, Wm. A. Cole Paper Company, Putney, Vt.

XUM

THE CURLING OF FINE PRINTING PAPERS*

By H. H. Hanson and H. H. Hackett Eastern Mfg. Co., Bangor, Me.

A few years ago the curling of paper was almost unheard of, but with the development of automatic printing presses it has come to be a very important factor in the making and selling of high grade printing papers. The printer demands high speed and production and in order to get results the paper must lie flat on the press, where the automatic feeders cannot fail to reach it. The initiative in the prevention of curl must come from the paper-maker because while the printer can do much to allay it, he cannot stop it altogether.

Along with other mills, we have had our share of curling difficulties and have found it desirable to study the subject from a fairly fundamental point of view. We do not claim to have as yet thoroughly mastered the problem, although we believe we have made a fair degree of progress. In this paper we endeavor to present the fundamental principles involved, our general method of attack and some of the experimental results and conclusions. As to application of results, we realize that the variation of stock, tackle and methods of operation in different mills is such that what might be a cure-all in one place may have no particular effect in another and that therefore each of you must consider our suggestions as something to work from rather than as directly applying to your own plant.

Print-Shop Investigation

It is evident that an investigation of the causes of curling must start by a study of printing press operation, and the conditions in a print shop under which paper curls. We find first of all that the trouble comes almost always in winter and that it is often particularly bad on very cold days. The atmospheric conditions of most print-shops in such weather are, high temperature and low humidity, often as low as 20 per cent.

We find further that there are several kinds of curling, as follows:

(A) Surface Action. The individual sheets of paper lying in a pile on the press curl upward at the edges, the top sheet always curling the worst. The action seems to be progressive, several sheets near the top curling a little and each sheet as it becomes the top one, curling badly.

(B) Set. The whole pile of paper on the press may have a curved rather than a flat set to it. In such a case the individual sheet seems to revert to a former desirable curved shape as soon as it is lifted from the pile by the feeders and is free to move.

(C) Static. The individual sheet may stick to the press so that it is not easily removed after the printing has been done.

There may also be slight variations from or combinations of these three, so that it is not always easy to describe the action. These are however the primary movements and their elimination stops curling or at least reduces its effect by a very considerable degree.

Immediate Causes of Curling

The mechanism of the actions described under (A), (B) and (C) is as follows:

(A) Cellulose is hygroscopic and all paper contains more or less moisture, the amount being directly dependent on the humidity of the air to which the paper is exposed. For example, paper exposed to air at 65 per cent humidity comes to equilibrium at 8 per cent moisture content, paper exposed to air at 40 per cent humidity at 5 per cent. When paper absorbs moisture it expands and when it dries, it contracts. Paper taken from a condition of equilibrium at 65 per cent humidity and brought into a room at 40 per cent humidity, immediately begins to lose moisture, and this action is accompanied by shrinkage. If now only one side of the paper is exposed to the new conditions, or if moisture leaves one side of the sheet more easily than the other, the dried side shrinks more, becomes shorter than the wetter side and in order to adjust itself to this condition, the paper curls with the short side naturally concave. Most paper is shipped with a moisture content of approximately 6-7 per cent, that is, in equilibrium with air at about 50 per cent humidity. It is evident that if brought into a hot dry print shop at say 20 per cent humidity, considerable drying and shrinkage will take place and if for some reason moisture can leave one side more easily than the other, curling will result. This is what happens when the individual sheets of an apparently flat pile of paper start curling on a press.

(B) Paper very often has a definite set in one direction and almost invariably it is the wire side that tends to be concave, being a little shorter than the felt side. This effect is generally not noticeable in a pile of paper of large size, but when a ream is cut down to small sizes for printing, it becomes immediately apparent. When the single sheets are fed into the press, the set becomes more pronounced because each sheet is free to conform to its natural shape. The curved shape was originally given to the paper by being dried in this position or by being dried harder on one side than the other. No amount of stretching or pressing in a pile will permanently eliminate this set.

It is advisable here to mention one condition necessary for curling such as described under (A) and (B), namely the coherence of the paper. No paper will curl if each individual fibre is free to shrink by itself as in a blotter. It is necessary for the individual fibers to be cemented together, so that shrinkage is transmitted to the paper as a whole. The amount of curl may or may not be proportional to the percentage of cementing material depending on the kind of binder and its method of application.

(C) The curling or sticking action described under (C) is due to static electricity developed by the friction of the moving parts of the printing press. Static, of course, is always worse on cold, dry days. The paper manufacturer cannot stop static in a print shop, but he can help its action on paper. Very dry paper is conducive to static troubles. Paper containing 6-7 per cent moisture will run perfectly safe under severe static conditions.

Fundamental Causes of Curling

Behind the immediate causes of curling illustrated above we must find the underlying causes in order to achieve success in prevention. We believe, as you will see, that almost every operation of paper making is involved to a greater or lesser extent. It is apparent that the investigation must find the factors which produce two-sidedness and set and those which cause a sheet of paper to act as a coherent unit rather than individual fibers. Machine dried and loft dried papers must be studied separately, because the final operations may have an important effect. Up to the operation of the tub sizing, however, we may consider all papers under one class.

(A) Beating and Jordaning. The moisture contained in cellulose may be of two kinds, it may be present as a mere physical mixture, or it may be in chemical union with the cellulose molecule. In a beater most of the water present is in mere mechanical contact with the stock but a little is bound to it by chemical ties and this we call chemical moisture or moisture of hydration. The presence of a comparatively large percentage of moisture of hydration gives us slow or greasy stock. We all know that mechanical attrition in the beater increases it. Technically speaking, its formation is accompanied by a gelatinization of the fiber wall. The

* Read at the meeting of the Connecticut Valey Division of the American Pulp and Paper Mill Superintendents' Association, Holyoke, Mass., Nov. 18, 1922.

gel acts as a cementing material holding the fibers together in the web of paper. The moisture of hydration can be thoroughly removed only by high temperature drying, it is the last to leave the paper on the drying cylinders and its removal is accompanied by excessive shrinkage of the fibers and web. Moisture of hydration probably acts in several ways to make paper curl:

1. It cements the fibers together so that shrinkage and expansion of individual fibers are transmitted to the paper as a whole.

2. Unless it is thoroughly removed on the drying cylinders, the paper produced is liable to excessive shrinkage when exposed to the drying atmosphere of a print shop.

3. A third cause has to do with sizing and will be taken up under that subject.

(B) Beater Sizing. Rosin Size precipitated by alum acts as a cementing material. It does, however, tend to make paper waterproof and should therefore prevent quick changes in moisture content and consequent curling. Unfortunately the suction under the wire acts to partially remove the size from the wire side. Thus the paper is less waterproof on the wire side than it is on the felt side and when the finished paper is brought into a drying atmosphere it is reasonable to suppose that moisture leaves the wire side more rapidly.

Here we must again bring in the effect of hydration. The greasier a stock is the better the sizing but also the more important from a curling standpoint, the higher becomes the vacuum in the suction boxes and roll. The sheet is now more compact, less size is drawn through the sheet and a greater proportion is probably removed from the wire side. We thus have a sheet more two-sided from a size standpoint and more liable to curl.

(C) Alignment of Fibers. The shrinkage of fibers is very largely in the cross-section rather than the length. The fibers tend to align themselves on the wire in the direction of travel and since the curl takes place in the direction of greatest shrinkage we almost invariably find paper curling with the curly edge in the machine direction. Longer or harder beating increases the fraying of the fiber ends and decreases machine direction alignment, but because of increased hydration probably does not help curling.

(D) Pressing and Drying. Pressing may make paper two-sided. The web coming off the wire is smooth on the wire side and rough on the top or felt side. The first press smooths the felt side and roughens the wire side. The second press which is usually the last on fine paper machines does the opposite.

We thus may have the paper going to the driers two-sided in two ways, comparatively less size on the wire side and a smooth wire side. It is easy to see that the lack of size on the wire side will cause that side to dry comparatively quickly. It may also be a fact that the smooth wire side gets better contact with the driers than the rough felt side and further develops the two-sided drying. The effect of these conditions would be greater shrinkage on the wire side and a curl set towards that side.

Hard drying is necessary to remove a sufficient amount of the moisture of hydration. If this moisture is not removed on the machine or by further drying before the paper is shipped, it may cause trouble in a dry, hot print shop.

(E) Tub Sizing. While tub-sizes, both animal and vegetable, have the effect of rosin in giving ink resistance, they differ from rosin in one very important quality, namely, that they are not moisture-proof. Everyone knows that both glue and starch absorb moisture and that when they do they expand very appreciably. It is not so evident to the papermaker but just as true that when they dry out and lose moisture they contract just as much. Investigation shows that both glue and starch undergo greater changes in moisture content and dimension than does cellulose under similar humidity variations. These qualities do no great harm in themselves but may if their application or dryness is different on the two sides of the paper.

It is now time to divide the discussion into machine dried and loft dried divisions. Let us first take machine dried. We have seen that paper is two-sided as to rosin size and that therefore it is more moisture-proof on the felt side. It is evident that this condition will induce greater absorption of tub-size on the wire side. If now drying is immediate as on machine dried paper, the size has no chance to permeate the sheet and equalize. The drying on the second nest continues to be two-sided and the paper is in a worse condition for curling than before it entered the tub. Now, we not only lack rosin on the wire side but we have on that side a comparatively larger amount of a substance more hygroscopic and more liable to large dimensional changes than cellulose.

Tub-sizing does not have nearly the effect on loft dried that it does on machine dried paper. In the first place the size has plenty of time to permeate the sheet so that it is more evenly distributed throughout and secondly the loft drying is not two-sided.

(F) Finish. Finish acts to inhibit curling by decreasing the set towards the wire side. This is probably accomplished not by stretching the wire side as this would give only temporary relief, but by actually pulling the fibers and bonding material slightly apart. We find therefore that highly finished papers like ledgers and flats give little or no trouble.

(G) Pole-Mark. One of the worst, if not the worst factor in the curling of loft dried paper is the set given to the paper in drying over a pole. The tub-sizing operation expands the sheet normally about three per cent. In drying the paper should shrink about the same amount. That part of the paper hanging down below the pole does shrink unrestrainedly but that part over the pole is prevented by the weight of the sheets in close contact at that point. After drying, this part is larger than it should be and we have a distinct bubble in the sheet which only high finishing such as is generally not allowable in loft dried bonds, will take out. The bubble may seem to partially disappear in a pile of paper but when small individual sheets are fed into the printing press, it shows up if printing conditions are poor.

Conclusion

It is clear that if our work has been well done and conclusions properly drawn, practically all operations of paper making affect curling. To overcome all the obstacles in the way of producing bond paper that "lies flat" seems in view of this an almost impossible feat. The problem as you know is further complicated by the fact that steps taken to stop curl may seriously interfere with other qualities of paper. For example a soft, poorly sized paper does not curl but lacks bond characteristics. We believe, however, and practical results have proved this, that by directing preventive efforts all along the line of manufacturing, curling can be stopped. Complete success means proper methods of testing, careful instructions to the crews, and everlasting watchfulness by the foremen.

To Make Writing Paper at Taylorville

In a recent issue the *Review* of Decatur, Ill., printed the following:

"Announcement of the sale of the paper mill of the E.-Z. Opener Bag Company at Taylorville to be converted into a mill for the making of fine writing papers will interest those Decatur men who worked so hard about ten years ago to bring that mill to Decatur, it being part of the manufacturing plant of the E.-Z. Opener Company which was left in the Christian County town after the bag mill had been secured for Decatur.

"The Decatur Association of Commerce, after much negotiation, secured the bag mill and purchased for it the site it now occupies at West King and North Van Dyke streets, the paper mill by agreement being left to be brought to Decatur later.

"Owing to labor troubles at Taylorville the paper mill had many interruptions in its running and the deal for its removal to Decatur was never completed."

XUM

ECONOMICS OF LIGHTING IN PULP AND PAPER MILLS*

By J. H. Kurlander, of the Lighting Service Department of the Edison Lamp Works, Harrison, N. J.

The engineering features of installation design for paper and pulp mills have been treated so thoroughly in a previous article by the present author† that no effect will be made here to cover this phase of the subject in a comprehensive manner.

However, it may be advisable to review, briefly, the essential requirements of any lighting system for the purpose of placing stress on these points.

Too much emphasis cannot be placed on the careful selection of such accessories as lamps and reflectors.

Incandescent lamps are available for industrial use in sizes ranging from 10 watts to 60 watts in the vacuum, or Mazda B lamps and from 75 watts to 1000 watts in the gas filled, or Mazda C lamps. The Mazda C lamps are more efficient than the Mazda B and the efficiency of the former increases with lamp size. Thus a comparison of a 110 ten volt 100 watt Mazda C lamp with a 110 ten volt 500 watt Mazda C lamp showed that the former emits 1,300 lumens of light while the latter emits 9,000 lumens. Figured in terms of efficiency, the above shows 13 lumens per watt for the 100 watt lamp as against the 18 lumens per watt for the 500 watt lamp, an increase of 38 per cent. Or, in other words, one 500 watt Mazda C lamp gives about as much light as seven 100 watt Mazda C lamps. The curve in Fig. 1 shows how the efficiency of Mazda C lamps increases with lamp size and from this curve, it is obvious that a great saving in power can be effected by using the higher wattage lamps wherever conditions warrant their use. The conditions necessary for the use of these large lamps are primarily a high ceiling and large work area. A high ceiling is required to enable the lighting units to be hung high, thus reducing the glare and also distributing the light over a large area. A large area is necessary in order to permit the use of a sufficient number of units so that light from a number of units falls on any one point. This makes for even distribution and diffusion. Diffusion is also obtained by the use of bowl-enameled lamps. Bowl-enameling consists of spraying a dense, white, mineral coating on the lower half of the lamp, which acts to reduce the brilliancy of the lamp and also diffuses the light. The absorption of light due to this enamel is very small.

In addition to lamps, proper reflectors are necessary for the following reasons:

1. To increase the light on the working area.
2. To shield the eyes of the workers from direct glare.
3. To reduce lamp breakage.
4. To reduce dust accumulation on lamps.

For economic reasons, nothing could be better than to standardize on the use of a few carefully chosen units which would meet all requirements for mill lighting. For paper and pulp mills, the following types would take care of all needs.

1. A dome reflector with deep skirt such as the R. I. M. standard dome reflector for general lighting of workrooms.

2. A choice of either the elliptical angle or straight angle reflector for paper making machine and calendar lighting.

3. A deep bowl reflector for local lighting, where such is required, and for extremely low hanging heights, such as are usually found in basements. This is necessary as otherwise the bright lamp would be in a direct line with the eye and would be decidedly glaring.

4. A good form of semi-indirect or totally enclosing glass unit for finishing rooms handling high-grade stock, office lighting, etc.

To the above could possibly be added a small 6-inch glass bowl reflector for toilets, wash rooms, stair landings, small rooms, etc.

In addition to the proper accessories for the lighting installation, two other points must be considered. One is installation design and the other is the intensity necessary to carry on work efficiently and accurately.

The matter of installation design was covered in the paper mentioned and as nothing new has been developed, which would tend to affect the data presented, no further mention need be made of it here.

The question of the proper intensity or amount of light required on work planes is often open to considerable debate. There is at present no accurate method of predetermining the correct intensity for a specific operation other than that based on experience. Upon the say-so of presumably experienced persons often rests the matter of deciding upon a suitable intensity. This is sometimes a stumbling block when trying to convince persons of the desirability of using higher intensity for particular operations, than that ordinarily used. A method will be outlined later which will indicate approximately a desirable intensity for any operation. Suffice it to say, however, that tables of intensities have been compiled covering a large list of industrial operations, based on experience and observation, that will enable anyone to decide which intensity is proper for any operation.

Revamping Present Installation

It is not to be expected that when a plant or mill wishes to install modern lighting, it will immediately proceed to tear down the present wiring and lighting units and scrap the entire installation. Such a procedure would, in the majority of cases, prove prohibitive and altogether unnecessary. In some mills, no doubt, only minor changes would be required to bring the installation up to good practice. In others more elaborate changes would be required. Unfortunately there are many where major changes would be necessary to obtain the desired results.

When setting about revamping an installation it would be well to follow a course of action as outlined below:

1. Make a critical inspection of the system as to type of wiring, whether open, conduit, etc. This will determine the ease of relocating outlets.

2. Lay out, to scale, on rough floor plans of the mill, the location of present outlets and wiring. Mark each outlet with the size of lamp it contains and the reflector, if any, employed and approximate hanging height of unit. Also whether the reflector is fit for further use or is to be scrapped.

3. With these plans before you, figure out the intensity on the work plane as should be obtained with the system.

4. Then measure the intensity, in foot candles, actually being obtained, by means of a foot candle meter. This should prove enlightening as to the amount of light being lost, due to lack of cleaning, wrong voltage, etc.

5. Refer to tables of intensities and see what is required for the particular operation in mind. Check this with the calculated figures and what is actually being obtained.

6. Then see what additional outlets are necessary to bring the intensity up to the desired figure.

The last step is the most difficult as it means mostly a cut and try process of adding new outlets to the present system and by so doing it that the system, when finished, is fairly symmetrical, thus obtaining evenness of distribution.

The question naturally arises as to what material should be scrapped and what should be retained for further use. Certainly all old, battered reflectors which have lost their reflecting properties should be junked. If there is any doubt as to whether the reflecting surface has deteriorated to such an extent as would war-

*Read at the meeting of the Connecticut Valley Division of the American Pulp and Paper Mill Superintendents' Association, Holyoke, Mass., Nov. 18, 1922.

†"Modern Lighting for Pulp and Paper Mills" a paper read at the Spring Convention of the Technical Association of the Pulp and Paper Industry, New York, April, 1922.

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rant its being thrown away, compare it with a new reflector and determine the extent of its depreciation.

Some classes of reflectors depreciate more rapidly than others. Such reflectors as have painted aluminum or painted enamel surfaces, besides being subject to a rapid temporary depreciation, also have a rapid permanent depreciation. By temporary depreciation is meant that the reflecting surface easily collects dirt and unless frequently cleaned, soon fails to serve its main purpose of redirecting light to the working plane.

Permanent depreciation is of the nature of peeling and discoloring of the reflecting surface. As distinguished from the types of surfaces mentioned, the porcelain enameled reflectors deteriorate much less rapidly, are easier to clean, and are usually more durable because heavy steel is used in their construction.

Another point worth mentioning when any changes in an installation are made, is that of using the right size of lamp in the right reflector. For example, 100 watt Mazda C lamp should not be used in a reflector designed for a 60 watt Mazda B lamp. The R. L. M. Standard Dome Reflector was designed for the use of the Mazda C lamp. Many of the older type shallow dome reflectors were designed for the use of Mazda B lamps. When Mazda C lamps are used in such reflectors they are glaring and the light utilization is low.

110 Volt Vs. 220 Volt for Lighting Circuits

The question of whether to use 110 volts or 220 volts for lighting circuits brings forth some interesting information as to the comparative cost of these two systems. The advantages are entirely with the 110 volt installation for a number of reasons. It is true that a high voltage economizes on copper but the lamp is undoubtedly the most important element of the system. As the economics of lamp selection do not seem to be generally understood, a brief analysis will be made to show the desirableness of the 110 volt lamp over the 220 volt lamp.

It is not possible to make 220 volt lamps which are uniformly as good as 110 volt lamps. The filament of a 220 volt lamp is very much longer, and of thinner wire than that of a 110 volt lamp of the same voltage. This results in three things; an increased cost due to the increased labor involved in mounting the filament and also to the smaller demand for these lamps. A lowered efficiency due to larger radiation losses. Increased breakage of filament, due to greater fragility. That these factors are of considerable importance when considering the design of an installation is evidenced by the table below which shows the saving that can be effected by the use of 110 volt lamps in place of 220 volt lamps. This table is worked up on the basis of supplying a factory or mill of 100,000 square feet floor area with an intensity of 4-foot candles.

It is assumed that 300 watt lamps in R. L. M. Standard Dome Reflectors will be used and that the overall efficiency of the installation is 50 per cent.

Typical Calculation of the Saving to be Effected by the Use of 110 Volt in Place of 220 Volt Lamps

Voltage	110	220
Wattage	300	300
Lumens	4,900	4,300
Number of units required	164	186
Net cost per lamp ($2,500 contract)	$1.35	$1.60
First cost of lamps	221.80	297.60
Saving on lamps	76.20	.....
Approximate cost of reflectors, etc	4.00	4.00
Total cost of reflectors, etc	656.00	744.00
Saving on first cost of reflectors, etc	88.00	.....
Total saving	164.20	.....
Per cent saving	15.7	.....
Fixed Charges:		
Interest at 6 per cent on installation cost	$52.64	$62.49
Depreciation at 20 per cent on reflectors, etc.	131.20	148.80
Cleaning at $1.20 per unit per year	$186.80	$434.49
Total annual fixed cost	$380.64	$434.49
Energy (4,000 hours' operation per year at 1c. kw.-hr.)	$1,968.60	$2,232.00
Lamp renewals (4,000 hours' operation)	885.60	1,190.40
Total operating cost	3,234.24	3,856.89
Total annual saving	622.65	.....

This table is given merely as an indication of what can be accomplished in the way of operation economies on the one point alone. No doubt the question arises in some minds as what can be done regarding those mills at present equipped with 220 volt circuits. It is impossible in a paper of this kind to give detailed calculations on this point. Suffice it to say, however, that a proportionate saving can be effected in a number of ways by changing or adapting the existing 220 volt circuits to the use of 110 volt lamps.

Some of these methods involve the use of one of the following:

1. Installing a motor generator set of the required capacity. By balancing the loads the capacity of this machine need be a small percentage of the total load.
2. By using a balancing coil or auto transformer. Here again the capacity need be but a small fraction of the total load.
3. By using a revolving compensator for modifying a two-wire, 220 volt D. C. generator to a three-wire, 110-120 volt machine.

It might seem at first thought that it would be extravagant to spend money for additional wiring and machinery merely for the sake of using 110 volt lamps, but in most cases the return on the money so spent usually pays for the equipment in a very short while. Besides paying for itself, it also nets quite a handsome return on the investment.

The Economics of Good Lighting

One of the greatest drawbacks to the use of high intensity lighting in industrial plants has been the lack of sufficient data to show concrete evidence of the benefits which accrue to the users of such systems. It is well enough to talk vaguely of contented workers, greater safety, neater mills, etc., as the results of good lighting, but the plant owner is apt to reason, and rightly so, that if his mills were lighted well enough to insure safe working conditions, and a fair degree of visual acuity to carry out the plant operations, why should he spend more money to secure light which apparently affords no money return. "I can't afford it" is a common excuse for not installing better lighting in many mills.

The principal object of this paper is to show that the money spent for securing light over and above that required for merely safe lighting is money well invested and capable of giving a return far above any sum required to change over to high intensity lighting.

High intensity lighting has in recent years been referred to as Productive Lighting. This, for the simple reason that a higher rate of production is possible under such lighting than under that merely sufficient for safety to workers. A number of tests, which will be discussed later, show that production is actually increased under higher levels of intensity. The reason for this is no doubt of interest to all of us. All of the objects used in the ordinary industrial plant can be placed in one of two general classes. These are stationary objects and moving objects.

In the case of stationary objects, perception of detail is ordinarily of great importance. This can be illustrated by a simple test making use of a chart, such as that used by ophthalmologists, called a Snellens' chart. It consists of lines of letters, arranged without regard to order, but decreasing in size from top line to bottom line. At a given distance from this, which when it is lighted to a given low intensity, a person is able to read down to a certain line of letters. When it is lighted to a higher intensity, however, invariably several additional lines of letters can be read, proving that under a high intensity a person is able to perceive much finer detail.

In the case of objects in motion, the time element is probably most important. Consider a game of night tennis played on an artificially lighted court. If the lighting system is not properly designed to give high intensity and well distributed light, when the ball passes from a light area to a darker one it apparently gathers speed; conversely, when passing from a darker area to a lighter one, it apparently slows down. Translating this in terms

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For conditions more severe than the average, and for machines that are not in the best condition, we recommend the use of Kenwood Plain Bottom Felt Design 196 and Kenwood Top Felt Design 176 leaving presses as above.

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of shop talk, it can be said that moving objects in well lighted area or plant are more readily perceived than those in a poorly lighted plant. No doubt some of you have played baseball at twilight and have had the unpleasant experience of seeing the ball coming toward you too late to catch it.

There have been a number of experiments carried out by investigators which show that a definite relation exists between speed of vision and intensity. Data can be given showing that in a number of card sorting tests carried out by these investigators, increased speed of operation invariably followed a raising of intensity.

However, mere raising of intensity is not sufficient to obtain this increased production. There are some instances on record where the lack of attention to the design of installation nullified the good effects of the high intensity and even acted to cause a falling off of production.

It may be well to mention the results of a test conducted under actual operating conditions in an establishment where sorting is part of the normal operation. In this test addressed envelopes were used and experienced operators sorted these as to geographical districts. Outlets for lighting units were provided where needed and then to secure increases in intensity the smaller units were replaced with larger ones until the largest size unit available was used. Totally enclosing units were used and the hanging height was maintained constant. This last fact is accountable for the ultimate failure of the installation. There was a constant increase in the number of cards sorted per minute until the intensity was raised to 14 foot candles and then a decided drop was noticed. The operators under the 14-foot candle installation complained of the light being "too bright." The lighting units for this particular intensity measured 18 inches in diameter and were hung only 11 feet high. As a result it seemed as if the entire ceiling were covered with lighting units and the installation proved to be very glaring. This point is brought out to show the necessity of co-ordinating the design with the intensity which too often is overlooked. An intensity of 14 foot candles is by no means too much light to supply for work involving such demand on the eye, if the installation is properly designed. It should be remembered the ordinary daylight intensities range from 50 foot candles in office rooms to several thousand foot candles out doors. Investigations of places said to be overlighted will, if anything, prove that they are *glaringly underlighted.*

It might be mentioned here that card sorting was selected for the first test because of the demand made on the eye and also, because of the nature of the work, increases in production, so to speak, or rather "spread of vision" would show up readily with this class of work, with increases in intensity. The second test, however, as stated before, involved work as ordinarily performed in the normal operation of the establishment.

Increases in production are not confined to laboratory experiments and such work as card sorting. Proportionate increases can also be obtained in practically all operations involving manual effort where a fair degree of eye work is required.

The more eye work, so to speak, the greater will be the return on the money invested in more light. Operations in many other industrial processes are equally susceptible to these increases. That this is so is proven by the results of tests conducted in a number of shops where accurate records of production were kept before and after high intensity lighting was installed.

The following table contains a digest of these tests:

Productive Lighting Tests

Test No. 1

Press Dept.	Old	1st increase	2nd increase	3rd increase
Intensity in Foot-Candles	0.7	7.0	13.0	22.5
Increase in Production	..	6.3%	22.5%	24.3%

Test No. 2

Semi-Automatic Buffing Dept.	Old	New
Intensity in Foot-Candles	3.8	11.4
Increase in Production	..	8.5%

Test No. 3

Iron-Pulley Finishing Shop	Old	New
Intensity in Foot-Candles	0.2	4.8
Increase in Production	..	35.0%

Test No. 4

Soft Metal Bearing Shop	Old	New
Intensity in Foot-Candles	4.6	12.7
Increase in Production	..	15.0%

Test No. 5

Heavy Steel Machine Shop	Old	New
Intensity in Foot-Candles	3.0	11.7
Increase in Production	..	10.0%

Test No. 6

Carburetor Assembling Shop	Old	New
Intensity in Foot-Candles	2.11	12.5
Increase in Production	..	12.0%

Test No. 7

Spinning Machines (Textile Mills)	Old	New
Intensity in Foot-Candles	1.5	9.0
Increase in Production	..	17.0%

Most of the increases in these tests were obtained at an increased cost of approximately 1 or 2 per cent of the pay roll. In other words, if you had a hundred men working for you and then employed one more and this one man increased production by 10 per cent, he would be a rather valuable worker. Why not let lighting do this for you?

Granted that the results of these tests afford proof that a very appreciable increase in production can be obtained by increasing the light under which work is carried on, the next question that naturally arises concerns the expense of obtaining such increases. Can these increases be obtained economically?

Total production can be increased in a number of ways. By employing more men, by using better machines, etc. The point is, however, will the output per man or per unit of cost be increased? If not, then no increase in efficiency has been obtained.

A table of annual cost based on the use of a 100-watt Mazda C lamp per operator per 100 square feet of floor area shows the very small saving in *time* required to affect the cost of operation. It is assumed that the lamps burn two hours per day, 330 days per year.

Analysis of Operating Cost

Cost of lamp (list, subject to discount)	$0.80
Cost of enameled steel reflector (list, subject to discount)	2.50
Estimated cost of wiring per outlet	6.00
Total first cost	$9.30
Interest on investment at 6 per cent	$0.56
Depreciation on reflector and wiring at 12½ per cent	1.06
Power at 5 cents per Kw.-hr	3.00
Cleaning at 3 cents per cleaning, two per month	0.72
Renewal of lamp $\frac{600}{1000}$ x 0.80	0.48
Total	$5.82

Wages for 8 hours per day, 300 days at 70 cents per hour are $1,680.

Ratio of cost of lighting per man to wages $\frac{\$5.82}{1680} = 0.35$ of one per cent.

These figures, which are based on assumed conditions less favorable than ordinarily found, show that if a workman saves three minutes' time per day, due to correct lighting, the entire operating cost of the system is paid for. They do not take into account the much smaller differential between the cost of good and poor illumination. Surely any employee will lose much more time than

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"Practically none," was the reply.

"I sent samples to our Laboratory and the report came back, 500 pounds in 24 hours.

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this under an inadequate system of illumination, when it is necessary to go to an individual lighting unit to read his figures, or to adjust the lamp in order to see his work better.

A lighting system, when operating at a high intensity, also operates more efficiently and hence at a lower cost per unit than one under a low intensity. This is shown better by the curve in Fig. 3 which shows the variation of relative operating cost with intensity. As an example: Suppose we have a 2-foot candle installation and we wish to treble the intensity making it 6-foot candles. The increase in operating cost will not be trebled but will be 2.4 times the cost of the 2-foot candle installation.

On the curve the 2-foot candle installation is shown as costing 2.6 relative units. The 6-foot candle installation is also shown as costing 6.2 relative units, and the cost of the latter over the former is $\frac{6.2}{2.6}$ or 2.4. Similarly for quadrupling the intensity, the cost is increased but 2.8 times.

So we see that Productive Lighting is something more than a mere catch phrase and is worthy of consideration on the part of the progressive plant managers and superintendents.

There are a number of places in the paper mill where productive lighting could be used to good advantage. The ragroom, machine room, finishing room, and packing and shipping rooms, all afford opportunity for securing the most from this great industrial servant. The finishing room particularly is well suited for such lighting as the operations in this department involve much eye work and it is here that most complaints of eye fatigue originate. The inspection and counting tables can well be compared with the card sorting tests mentioned previously.

Increases due to better lighting do not result from any driving action on the operators as the response to better light is natural and spontaneous.

Better working conditions are also obtained as eye fatigue is greatly reduced and efforts to maintain a cleaner, hence more sanitary, mill are facilitated.

MILL MANAGEMENT PROBLEMS*

By Robert B. Wolf of the Robert B. Wolf Co., New York

I haven't attempted to prepare a paper. I thought it would be much better to just give a direct talk and compare notes with the superintendents rather than to write a formal paper. In order to get before you some of our recent experiences in mill management work, I am going to give you this afternoon some concrete results we have obtained by the development of cost methods.

In one plant, during the past year and a half, we have succeeded in reducing the cost of maintenance materials over two dollars a ton on the entire production. The way in which this was accomplished was by establishing cost keeping methods which aroused interest in lowering the costs of production. When we took over the management of the plant, we found that, in common with a good many mills, there was no real store keeping system which enabled materials going out of stock to be charged direct to the point where they were used.

The first thing, of course, that was necessary was the complete reorganization of the stores department. Getting our materials all under cover and running a perpetual inventory made it possible to charge direct to the particular maintenance jobs the materials as they were used, putting into the hands of the foreman of the maintenance crew the exact cost of the work that he was doing.

At first, as you can well imagine, there was considerable kicking about not being able to go in and help themselves to anything they wanted at any time. However, that didn't last very long, because the real interest in having knowledge of costs offset that apparent inconvenience at the start.

The next thing we set up was a card system (it doesn't have to be a card system, but we used cards for convenience) which gave the cost of maintaining each piece of apparatus in the plant. I remember hearing a discussion one day between the general superintendent and the superintendent of the sulphite mill to the effect that the pump which was supplying the digesters with acid was costing one hundred dollars a month to keep in repair, largely because of troubles with the drive and counter shaft and various things. The general superintendent said, "How do you know it is costing that?" "I don't know, but I am pretty darned sure it does." The card showing the cost of maintaining that piece of apparatus disclosed the fact that it cost one hundred and seventy-five dollars a month to maintain that equipment. Of course, it didn't take very long to change it and move that particular piece of apparatus out of the position it was in and replace it with another that cost less than ten dollars a month to maintain. There are a great many instances of this kind that I could cite to you, but I think they are unnecessary.

I will, however, mention one other, in another plant, that of a conveyor for conveying the wood room refuse to the boiler house. This conveyor was costing, including delays occasioned by shutdowns, approximately twenty-five thousand dollars a year to maintain. It broke down on an average once every two hours and had to be repaired. It had been done for so long that it began to be looked upon as a regular part of the operations, and, of course, when we began to figure the cost it didn't take long to replace it with something that cost very little to maintain and didn't interfere with operating conditions.

Classifications of Cost

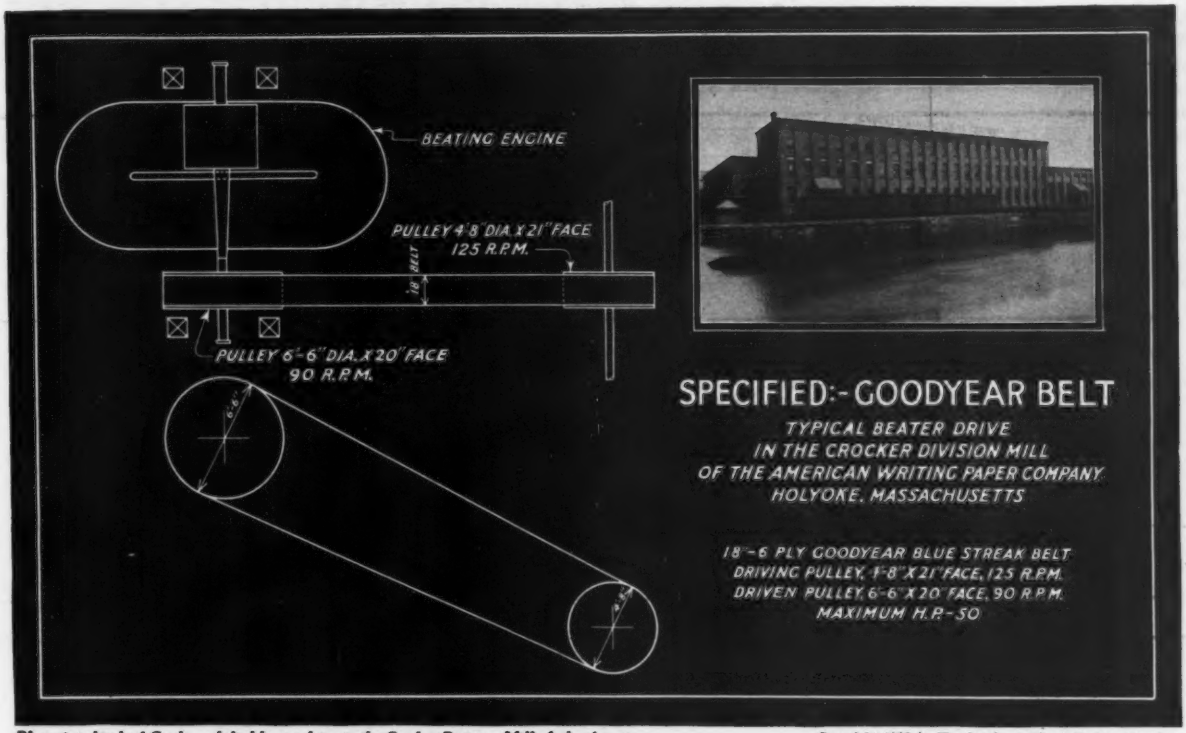
Now, I want to keep these classifications of costs separately as I go along. First, the cost of the job which the foreman doing the work, under the master mechanic, was responsible for, and, second, the cost of the apparatus itself, so that the department head (or the superintendent, if the plant is small) could come to the general superintendent and say "I would like to have this piece of apparatus changed because it is costing us so much to maintain; it is delaying us and if we replace it with something else we will get better results"; and give him the analysis and knowledge necessary to convince the general superintendent that he is right about it.

The next grouping of costs is by departments. We find that there is a keen interest in the department operating costs. For instance, in the wood room the cost of making chips per cord is of very great interest to the wood room foreman. He is not interested in the lowering of costs, of course, unless he knows what his past costs have been, and just in proportion as you can give to the operating foreman definite records of economy of operation is he interested in lowering his costs.

I guess perhaps some of you men have heard me tell about the actual economies affected in one of the mills I managed, but to refresh your memory I want to make this statement: that within twelve months from the time we began keeping these records, or when this method first originated, we lowered the maintenance cost of materials two dollars a ton. As this plant manufactures 130,000 tons a year, the saving is $260,000.

When I tell you that we were not able to get these costs down until we got the operating department heads interested in the

*Delivered at the meeting of the Connecticut Valley Division of the American Pulp and Paper Mill Superintendents' Association, Holyoke, Mass., Nov. 18, 1922.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Blueprint sketch of Goodyear-belted beater drive in the Crocker Division Mill of the American Writing Paper Company, Holyoke, Mass., and insert photograph of the Crocker Division Mill

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Twenty-six Eagle-A Mills and the G. T. M.

The American Writing Paper Company, of Holyoke, Massachusetts, comprises 26 mills throughout the country, making the nationally celebrated Eagle-A Quality-Standards of printing papers. The belting equipment and requirements of their every plant, involving hundreds of drives, have been analyzed in the past two years by a G. T. M.—Goodyear Technical Man.

"This analysis of the belt equipment in each of our 26 plants is the most comprehensive and valuable work of its kind that has ever come to my attention," writes Mr. J. Moles, Chief Engineer of the American Writing Paper Company. "The actual G. T. M. work required months, and the final report, together with recommendations submitted by the Goodyear Company, comprises several volumes."

A great deal of the equipment installed on the basis of this expert analysis is Goodyear Blue Streak Belting. This is particularly true of the equipment of the great beater drives which transmit the power from the main shaft to the great revolving cylinders where numerous knives beat rags into stock for the paper machines.

Two of these Goodyear Blue Streak Belts, 18-inch, 6-ply, were installed in the Crocker Division in Holyoke, in June, 1920. These two Goodyears have been in constant operation for two years now, and have never been touched. They never required taking-up or repairing. Mr. Moles says they are as good today as the day they were installed, though they have been working on this heavy drive for 24 hours a day. six days a week.

Hundreds of other Goodyear Belts in American Writing Paper plants are giving correspondingly faithful, trouble-free and long-wearing service. Their efficient and economical performance is a tribute to the quality built into them and to the correctness and exactness with which they are specified to their jobs.

This is a splendid example of the work of the G. T. M., the working of the Goodyear Plant Analysis Method, and the performance of Goodyear Belts. You can have a similar survey made of your transmission or conveying problem. There is a G. T. M. in your neighborhood, and you may rely on his recommendations and on the quality of Goodyear Belts. For further information about the Goodyear Analysis Plan, write to Goodyear, Akron, Ohio, or Los Angeles, California.

GOODYEAR

economy of operation, I am telling you exactly what the situation was. The superintendent, myself and the chief enginer, were constantly urging and pushing the department heads (nagging them, if you please) to be more economical in the use of materials, but not knowing the economy with which their departments were running, what we said to them didn't make much impression. However, just as soon as we began to put into their heads actual departmental cost sheets, which, for instance, gave the man in charge of acid making the cost of making his acid per ton, the man in charge of the boiler house the cost of making steam per one thousand pounds, and the man in the wood room the cost of making chip per cord, immediately we began to get a keen interest in the lowering of costs.

I remember that shortly after we got these departmental cost sheets going the keen interest that was aroused reflected itself first upon the chief engineer of the plant. He came in to me one day and said: "Mr. Wolf, these damn department heads won't leave me alone." I said, "What is the matter?" and he replied, "I had some men over at the log pond bringing in some press rolls and Joe said they are a bunch of loafers and asked me to send over some good men."

The result was that all through the plant the operating department heads, being interested in costs, would keep the master mechanic and chief engineer informed as to poor economy and operation.

The job costs followed naturally because when the man in charge of the department found fault with the foreman who was doing the work, the foreman not knowing what the costs were logically went to the master mechanic and said, "We don't know what it costs to do the job; why can't we have some information?" And, as a result, we developed individual job costs.

Now, when I tell you we had men come to the mill with little scales in their tool boxes to weigh the bolts, nuts, screws and gaskets that were delivered by the storehouse, anything that was delivered on a pound basis, so as to make sure that the storehouse wasn't beating them, you will see what a tremendous interest there was in keeping costs down.

No Bonus System

There was no bonus system. We did not pay for piece work and nobody got any more out of it except the satisfaction of doing a good piece of work. Of course, the net result was tremendously more efficient operating conditions in the plant and wages went up; but they went up by the hour and the day and not because of any system of paying a man more because he did a good piece of work.

At the Pejepscot plant a cost keeping system has been developed whereby the manager sits down at the beginning of each month, or just before the beginning of each month, and with the superintendent of each of their three mills figures what the costs should be. In other words, a prophecy is made and that prophecy naturally can be made to better advantage because of the accumulation of knowledge we have of costs. Then each week an exact cost sheet is furnished with all the items in it to the superintendents and that is compared with the ideal cost.

The cost engineer told me the last time I was up there that he had to keep away from one mill in particular because they always wanted a lot more costs started, and he was so far behind he didn't go near there.

Now, if you get a lot of individuals interested in lowering costs, the result is going to be an interest in other things besides costs. In other words, when the costs go up the man wants to know why they have gone up, and he begins to inquire. For instance, if the cost has gone up in the boiler house he inquires the reason for it and, of course, this means that an answer has to be given. Is the quality of coal as it should be? Is the coal coming in with so much moisture that you are losing out on the fuel value? Is the coal being burnt properly, or are there holes in the fire?

Immediately the answer is to install a recording gauge which measures the output of the steam boiler. When there is a hole in the fire the flow of steam is interrupted, of course, and a gauge on the boiler, which instantly reflects the output of the boiler, is going to be a very valuable thing; also CO_2 instruments for measuring the carbonic acid in the flue gases are of value. These are of tremendous help to the firm. Finally, meters for metering the water that goes into the boilers and metering the coal that goes in. In that way definite information is reflected back to the foreman and the man in charge of just how much water he is evaporating for every pound of coal that he uses.

Now, ordinarily putting instruments like that into a plant doesn't meet with very keen response, but if you first put into the hands of the superintendent and the foreman the cost of operating his department, instead of being more or less indifferent to the use of these things which seem to be overly scientific, he begins to insist upon having some information; and that has been our experience.

The Item of Belts

Take the item of belts. All of you men will at once recognize the difficulties we have had and which you would like to see overcome yourselves, perhaps, of stopping a man from putting belt dressing on a belt. We used to take the belt dressing away, but there was always rosin and oil around the plant. I used it myself. If a belt was slipping the operator was a lot more interested in stopping the slip than he was in the fact that a new belt had to be put on the drive perhaps once a month. Now, when that belt is being charged in a departmental cost sheet against that department it doesn't take long for the operator to come to the engineering department and say: "You fellows get on the job. I am paying fifty dollars every thirty days to have new belts put upon that blooming drive. Now it isn't running fast enough, the pulleys are too small, or it ought to be wider." The result is that by pressure from the operating man the engineering department goes down and investigates the situation and corrects it.

Concretely, that sort of method applied in one of the plants referred to reduced the cost of belts from twenty-two cents a ton to three and one-half cents a ton over a period of four years.

Take the felt costs on wet machines. There are a great many things that will run these felt costs high. Probably the roll doesn't drop down in the vat sufficiently to give a proper cooching effect on the cylinder, or it may be that the rolls on the wet machine or on the paper machine are all covered with barnacles and are cutting the felts. There are many things that will keep your felt costs up; but when the man has reflected to him every month the actual cost of felts per ton, he takes an interest and lowers the cost.

I remember one plant where I proposed that the felt costs be given to the man on the machines. The manager held up his hands in horror. "Why," he said, "every blooming felt concern will come in and know what his felt costs are." My reply was, "The more the merrier. Let him know what the costs are. Give them to him."

I had one very definite experience where a felt manufacturer, who today is making what I consider the best pulp felt in the country, had the poorest record on felts. That fellow sent a man to our plant to study our conditions. He stayed there several days, went away and came back again, and he finally developed a felt which met our conditions and gave better results than anybody else's. If that isn't economy and doesn't reflect in lower costs, if it doesn't pay to do that, I am mistaken.

Lubrication

Take lubrication. You know how hard you have to preach to the fellow who is doing the oiling up not to put half of it on the floor. If you will give to the department heads the cost of lubricating their department, you will find out pretty soon that they will come to you, as they did, for instance, in one case, and say: "I would like to know what it costs to lubricate the top dryers and I would like to know what it costs to lubricate the bottom dryers

XUM

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Confidence is an asset of paramount importance in mercantile and industrial development. The whole march of civilization rests, in last analysis, on the confidence that men repose in their governments, their laws, their institutions—and in each other.

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of the machine." We finally had to segregate these costs in such a way that before we got through we had cut the lubricating cost of that man's department two-thirds and reduced the total oil bill two thousand dollars for the entire plant.

Now, that was due to the fact that there was interest in lowering costs. I could go on and enumerate a great many things of that kind, but it isn't necessary to give you any more illustrations.

I am only just urging that if you are fortunate enough in the plant you are connected with to have a cost keeping department that recognizes the fact that the main job of the cost keeping department is not to give information to the management to give somebody hell, but looks upon the problem as giving information to the fellow who is doing the job, so that he can give that little hell to himself, why welcome that kind of a cost-keeping system.

QUESTION: Will you tell us something about wires?

MR. ROBERT B. WOLF: The point I want to emphasize mainly is this: that after you get the men aroused to a desire to do better work the main job is to keep up that interest.

Perhaps some of you men have been in mills where the foremanship course has been developed. I know that in one or two cases a lot of interest has been aroused in developing a line of logic and reasoning, which stimulates the foreman to think—I mean a little more differently, about problems and analyze them. But the main trouble seems to be the follow up, to keep that interest up after the thing has once gotten to a certain point.

Now, the more mills that develop definite records of cost of wires, felts, lubrication and repairs, and put those costs into the hands of the men who really have something to do about them—the more mills that develop along those lines the less trouble there is going to be in keeping up that desire for better results.

Human Characteristics

Now, that gets back to a certain human characteristic that I am not going to dwell on at length, but merely want to emphasize, which is the basis of this keeping up of interest. It is impossible for an operating man to keep an interest in future economies of production unless somehow or other you can keep always before that man a definite record of his past quantity and quality and cost of production. You know what I mean, when you go back and compare it with some of the contacts you have had with men in your mills.

I say that if a machine tender or back tender, or a cook, when you ask him about certain conditions, reaches into his pocket and pulls out a note book and tells you what he did at the other mill, what the acid was or the cooking temperature or that this particular felt ought to last better because at the last plant where he was with the same width felt or perhaps a felt only a foot longer he got better results; or at another plant here he had perhaps a one hundred inch or ninety-five inch wire he got better results than here; and he begins to tell you that he has observed in this particular mill that the table rolls were six inches in diameter and didn't have any wobble to them, instead of four inches, where there was a constant throw like this, you have got a good man and you make a mental reservation, "There is a fellow I am going to promote the first chance I get."

In other words, that fellow has done the natural human thing which all human beings want to do, and that is accumulate records of his past performance. Now, there is only one reason for accumulating records. Perhaps you haven't thought of it just this way, but the reason for accumulating records is so that you can profit by that past experience, and the reason you put it down in a note book is because it is pretty hard to remember a whole lot of things unless you accumulate them in some sort of a form which you can refer to.

Now, the man who has accumulated the largest number of records of his past performance is the man who has the greatest possible vision of what the future possibilities can be. He is the fellow who sees further ahead. A lot of our men that we call idealists (and I am talking of ideal superintendents and ideal operators, too), are the fellows who somehow or other have the power of visualizing or looking back at the past, as it were, and letting that past be the guide to the future.

Now, it is just as impossible for a machine tender or a back tender, or a grinderman to visualize or get any idea of what the future possibilities are if he hasn't a record of the past, as it is for the manager to think in terms of economy if he has no cost sheet which gives him a chance to know how economically he is operating.

Wild Extravagance in Manufacturing

During the war I was with the Emergency Fleet Corporation. This is something we don't brag about much these days. But the shipyards developed so rapidly that it was impossible to get ship builders fast enough to take charge of the yards or to work in the plants. Before the war the total tonnage of ships built, the highest tonnage in any one year was 240,000 tons, as I remember it. That went up to 7,000,000 tons. You remember the barbers and everybody else had to be pressed into service.

In these shipyards the manufacturing proceeded faster than the cost records and there was the wildest extravagance in manufacturing because nobody knew what costs were. The costs hadn't kept up or hadn't caught up to the actual manufacturing conditions, and, in yard after yard after the cost systems got into operation, I saw things tighten up and the operators, the managers and the superintendents began to think of the possibilities of getting the cost per ton down. They took an interest in the future possibilities of lower costs when they had records of the past. You can't take an interest in the future until you have that.

Now, that sort of thing is, I think personally, the biggest problem that confronts the management today. I don't think there is any way to change the inefficient practices, the inefficient methods except by informing men who are responsible; and if that goes down to the individual machine tender, give him the information of the actual economy with which he performs, the actual quality of the paper produced, or pulp produced, so that he can tell what his past quality has been and take an interest in his future and the actual quantity of production.

In other words, it boils down to keeping intelligent records, and it boils down in the last analysis to having the manager of the plants, those who have really the power to do these things, to get the superintendents and get the foremen together and talk over ways and means of giving them information and knowledge, and it is perfectly astonishing the tremendous interest that will be taken in a very short space of time.

To Make Transparent Cellulin Sheeting

MILWAUKEE, Wis., November 20, 1922.—A new product known as Cellulin will soon be manufactured by the Cellulin Corporation, with general offices at 835 Caswell Block, Milwaukee, Wis.

Cellulin is the trade name of a perfectly transparent cellulose sheeting. This material is thin and flexible as tissue paper and as transparent as glass.

Plans are now in the process of formation to erect a factory at Milwaukee, Wisconsin, to manufacture Cellulin in large quantities. One grade of the factory's output for a period of two years is already sold.

Cellulin will be manufactured in various thicknesses, the lightest being 1/1000 of an inch. It will be marketed wound in rolls so that consumers can cut it any length desired.

Cellulin is not affected by acid, alkali or oxidizing agents of ordinary concentrations. It does not burn as readily as paper and the heavier grades are admirably adaptable for moving picture films and are not inflammable.

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THE CO-ORDINATION OF EXPENSE ITEMS IN PREPARING DEPARTMENTAL BUDGET*

JOHN A. REILLY, MANAGER OF COST AND INVENTORY DEPARTMENT, AMERICAN WRITING PAPER CO., HOLYOKE, MASS.

The good ship Business cannot be successfully piloted without the substantial rudder, knowledge. For a clear course, let us see how Webster defines *Knowledge*. Here is his definition: "(1) A clear and certain perception of that which exists, or of truth and fact; (2) learning; (3) illumination of mind."

Surely, no man will admit that knowledge is not absolutely necessary in the conduct of one's business. You men can readily see that the information we ask of you whether it is in the form of beater reports, labor distribution, or of steam and power distribution reports, etc., falls within the definition as given by Webster. Nor does it matter whether we term these reports—"costs," "knowledge," or what not.

"Illumination of mind"; in some cases we admit that this is more or less of a dark color; nevertheless, it brings before us a clear perception of that which exists.

If I had been asked five years ago to prepare a paper on the subject of cost to be read before superintendents, I can truthfully say that I would have had material enough on my desk for a paper that would easily take several hours to read. The subjects would have been actual cases where we had failed to get the accurate reports from the manufacturing department. Today, however, conditions are decidedly different, much to the advantage of the pulp and paper industry.

Cost Methods Improved

The cost man has become more "civilized" and does not request of the superintendents things that are not practical. He, from his talks with the superintendent over cost reports, has gained much practical knowledge; so today he is not looked upon as an unnecessary burden, but more as a needed part of the organization, ready and willing at all times to assist you in your pursuits for greater efficiency.

You, Mr. Superintendent, have also changed your viewpoint on the subject of cost, and, I am most happy to say, in the right direction. You are willing to meet the cost man on a 50-50 basis, and when heads of departments work on this basis, surely it means success for the organization.

We all admit that the progress of cost methods has been slow. Perhaps the cost man failed to sell his system to the superintendent or the methods he used were not practical, or the new departure was so radical a change that the executives put but little faith in them; there are many reasons for this slow progress. You know them as well as I. But, today, we have placed cost on a solid foundation. Just watch cost grow; not, however, like the "Eskimo Pie," with great success at the beginning, then to cease in demand to such an extent that it is seldom spoken of as a standard article.

Superintendents Doing Their Part

What evidence have I to prove the assertion just made that you superintendents are doing your part to promote good cost? Under date of October 24 I mailed a letter to every cost man in the paper mills located in this vicinity, 75 in all, asking each one to cite actual cases where his superintendent was a little lax in cost reports. I promised to treat all cases confidentially. What was the result? I have had only one reply in writing and one verbally. Neither was of importance, nor was any specific case given, so I am not going to mention either at this meeting.

At the recent cost convention held in this hall I talked with many of the cost men and they personally told me that what little trouble they were having now could easily be straightened out. Moreover, they had confidence in their superintendents to such an extent that their cost would stand up under fire.

Do you know of another industry equal in importance to the pulp and paper industry that can equal or surpass this record? Personally, I do not.

That, then, is the particular reason why I have chosen the subject of "Budgets" for today's meeting. You men are familiar with all mill reports that you submit to the cost department, but I hardly think that we have ever informed you as to the method we employ to derive at our cost per operating hour. We have mentioned machine hour cost to you several times, but I have no recollection of ever seeing any reports to superintendents treating on this subject.

Determination of departmental rates and the preparation of an expense budget differ but a little. Our department rates are on a normal basis, and therefore very simple to change if necessary to prepare a budget on a 50 per cent operation.

In all well established lines of business, the executives study past records for the purpose of preventing in the future the duplication of errors committed in the past. The future is a gamble, but the wise executive prefers to base his judgment upon the most accurate information that is available rather than to plunge into the dark without a light; consequently, the accountant, whether he be a commercial or a cost accountant, is requested to assist in the preparation of the expense budget. The budget, therefore, is the financial requirement to lay before a committee as an estimate for a given period.

Budgeting for Business Control

A quotation from the pamphlet entitled "Budgeting for Business Control," issued by the Fabricated Production Department, Chamber of Commerce of the United States, on the Possibilities of Budget, reads as follows:

"Budgetary control may mean much or little. It may mean merely the multiplication of useless forms the only effect of which is to hamper and further impede production and sales. On the other hand, budgetary control may mean the wise conduct of business, the subordination of pleasant dreams to actualities. The forms for budgetary control are not so material; (it is questionable whether many additional forms are necessary or desirable). It is the spirit behind the budget that is important, for, a budget, to amount to anything, must be predicated at least upon a knowledge of what a plant can do, of what are reasonable sales expectancies, of what financial resources are required and available for the sales and production programs.

At the very outset it should be emphasized that the budget cannot, nor is it intended, to take the place of able and skillful executives. The purpose of the budget is to reconcile and co-ordinate the effects of these executives, to draw from them definite promises of accomplishment from which to set definite goals, and to check actual performances in the terms of these goals; and we may safely go on the assumption that, if we draw from the executive definite promises of what they expect to do, 'It follows, as the day the night,' that they will leave no stone unturned to make good on these promises. For, if they fail for reasons within their control, it means eventually a change in management.

Advantages of Budget

"The advantages that are claimed for budget making may be summarized as follows:

"1. Everyone in the establishment will have a definite goal for attainment.

* Read at the meeting of the Connecticut Valley Division of the American Pulp and Paper Mill Superintendents' Association, Holyoke, Mass., Nov. 18, 1922.

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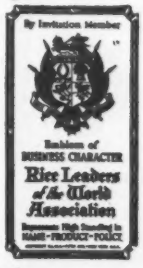
Throughout the length of this rope is a tightly twisted red, white and blue *Tape-Marker*. When untwisted it shows the words "Guaranteed Rope, made by Columbian Rope Co., Auburn, N. Y.," and indicates the manufacturer's faith in his product;—for the product *must* be good to carry this tangible guarantee.

Untwist a few inches of the next rope you buy and find this marker. It requires but little effort and means much.

Write for catalogue of Columbian Rope and Commercial Twines.



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"2. Sales and production plans can be co-ordinated with financial resources.

"3. More continuous operation and greater regularity of employment can be provided.

"4. Products, processes and equipment can be standardized.

"5. Costs can be used for purposes of control rather than as historical information.

"6. Reduction of waste will be encouraged by the maintenance of better balanced inventories, by instituting wage payments based upon results, by definitely assigning responsibility for expenditures.

"7. Taken in conjunction with the business cycle, the budget will give warning when to be cautious and furnish the cue to go forward with manufacturing plans.

"8. At all times, the budget serves as a measuring stick to compare actual performances with promises and standards, showing not only what may be done but what should be done."

Budgets, as a rule, are based on sales quota. We will assume, therefore, in order that I may adhere more closely to my subject, that the requirements for all material, commercial, selling and administrative expenses have been taken care of. It now remains for us to handle the departmental or manufacturing expense budget.

We have found that, due to the different items of expenses in the various departments, the total of our budget may be more accurately computed if we determined the financial requirements for each department and then summarized them to ascertain the total.

The items of expense are classified under four main headings:

01 Labor; 02 Supplies; 03 Fixed Charges; 04 Miscellaneous Items.

The various departments of the plant are divided into two main groups.

A. Production departments; B. Auxiliary departments.

In making this expense budget we do not simply rely upon past records, but we find it very necessary to consult with the superintendents, engineers, and purchasing agents in order that we may arrive at a figure which will be as near the actual performance as possible.

Labor

We consult with the superintendent relative to the number of employees per unit of equipment or department. With the schedule rates at our office we actually make out a payroll for a given period for budget purposes. From our sales quota we estimate the number of hours which the various pieces of equipment operate and thereby determine the total labor for a given period; in this particular case, one month.

Supplies

This item of "supplies" refers principally to small items such as brooms, pails, and other small perishable articles; we determine the figures from past records. On machine felts and wires, we submit to the superintendent our findings from past records, as to the probable life of each. After we have received his approval, we then consult with the purchasing department as to the market price of these commodities for the periods for which we are preparing our budget. Making the compilation, we arrive at the estimated cost of felts and wires for the period.

FUEL. The engineering department supplies us with an estimate of probable consumption, the purchasing department with the unit price.

BOX BOARDS AND NAILS are based from past records and figures taken from a special report on this particular subject and supplied by the engineering department. We have the average quantity of lumber and nails per case. From our sales quota we make an analysis for the purpose of finding the number of cases to be required for the period.

WRAPPERS AND TWINE are figured on a schedule similar to box boards and nails.

Fixed Charges

A. Taxes; B. Insurance on Building and Equipment; C. Depreciation and D. Employee Compensation Insurance.

Taxes, insurance, and depreciation are all pro-rated over the various departments on a valuation basis.

Employee Compensation Insurance is distributed on a payroll basis.

Miscellaneous Items

Such items include demurrage, reserves for inventory variances, division office salaries, unclassified expense, etc. All these items are charged to the auxiliary departments and eventually pro-rated over the productive departments. After having ascertained the total direct expense of the plant we then total the auxiliary departments and pro-rate over the various productive departments.

AUXILIARY DEPARTMENTS are classified as follows:

A. Steam; B. Power; C. Building; D. Millwright; E. General Plant.

STEAM. The total cost of steam is distributed to the various productive and auxiliary departments on a consumption basis. If meters are not available, the engineering department is called upon to assist in the proper distribution.

POWER. The total cost of power is distributed, likewise, on a consumption basis.

BUILDING EXPENSE. This includes such items as cost of operating and maintaining elevators, janitor service, and steam used for heating, etc. In our particular mills the steam used for heating is distributed on a consumption basis as furnished by the engineering department. The balance of expenses under building is spread over the other departments on a floor space basis, percentage of each department to the total.

MILLWRIGHT. This is indirect expense entirely and is distributed to the department, job, or project on the basis of millwright hours chargeable to each.

GENERAL PLANT. This is charged with all items of expense that rightly belong to the plant but not directly to any one department; such as division office salaries, demurrage, yard men, and inventory variances.

DEPARTMENTAL RATE. Having determined the total cost of each productive department, including the proportional part of the auxiliary departments, we then make the division, using the normal number of units as the divisor to ascertain the department rates. I quote a paragraph from a letter that I received recently from E. W. McCullough, Manager of the Fabricated Production Department, relative to the pamphlet, "Budgeting for Business Control":

"There is always some danger, when signs of the times point to our entering either a period of prosperity or depression, that certain circumstances or incidents may cause undue haste in proceeding in a direction which may later prove exceedingly detrimental. The period of inflation following the war is a fitting illustration. It is our belief that better individual control can be had by planning ahead, which after all is what is meant by 'budgeting.'"

Surely, you superintendents can readily see the necessity for the preparing of expense budgets. How, then, can you be of service to us so that we may submit to our chief executive a report as nearly correct as possible? My suggestions are as follows:

1. Do your best to have all mill reports accurate.
2. Submit your reports promptly.
3. Notify the Cost Department of any changes in your manufacturing procedure so that the cost manager may make changes in rates if necessary.
4. Insist upon changes in standards if you are satisfied that the estimate is greatly in error.
5. If information pertaining to manufacturing is not sent you, call upon the cost department for it.
6. Have this Local Division of the Superintendents' Association prepare a standard report that the cost man must fill in and report to you periodically.

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James Lawrence, President

The Lawrence Bag Company

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NEW YORK SUPERINTENDENTS HOLD MEETING AT WATERTOWN

Gathering Is One of the Most Successful in the History of the Northern New York Division of the American Pulp and Paper Superintendents Association—Members Inspect the Plants of the St. Regis Paper Co., and the Bagley & Sewall Co.—Papers Are Read on Various Interesting Subjects—John H. O'Connell National President Makes Inspiring Address at the Banquet.

[FROM OUR REGULAR CORRESPONDENT]

WATERTOWN, N. Y., November 20, 1922.—The Northern New York Division of the American Pulp and Paper Superintendents Association held the most successful meeting in its history Thursday, with a trip of inspection of the St. Regis Paper Company plants at Herrings and Deferiet and the Bagley & Sewall plant here dur ing the early part of the day, a meeting at 3 o'clock and a big dinner at the Hotel Woodruff at 6 o'clock. The group of more than 75 men present was entertained at luncheon at the St. Regis Inn at Deferiet as guests of the St. Regis Paper Company.

When the last word of the meeting was said by President Homer E. Stafford after the dinner and speakers program had been completed, it was the unanimous expression that the inspections, the special papers and discussions during the afternoon session, the dinners and the evening speeches made it the most successful and beneficial session the organization had ever enjoyed. There was something educational or entertaining every minute. The efforts of President Stafford and Secretary W. J. Argy had been well repaid.

A large procession of automobiles took the men to the mills early in the morning and the modern plants of the St. Regis Paper Company furnished many interesting features for the visitors. The Bagley & Sewall plant gave them opportunity to inspect a great paper making machine in all the stages of construction. It was educational and interesting and admittedly worth while.

Harold Bing Speaks on Suction Rolls

The business meeing was called at 3 o'clock in the grill of the Hotel Woodruff, President Stafford, of Knowlton Brothers, presiding. The first paper was presented by Harold Bing, representative of the Sandusky Foundry and Machine Company, Sandusky, Ohio, who wrote in detail concerning the suction rolls sold by his company.

After referring to the early failures of the idea and its first success as developed by W. H. Millspaugh, president of his company, Mr. Bing explained the workings of the roll which have popularized it.

"After the sheet or web of paper has been formed on the Fourdrinier wire the essential remaining problem as far as the machine is concerned is largely one of removing the water that is held in suspension with or in the paper fibers," he began. "This is, as we all know, accomplished to a greater degree by the pressure on the wet end of the machine and to a lesser degree by vaporation on th dry end. But there are different ways of applying the pressure on the wet end and the method employed largely depends on the character of the finished paper and its rate of production. The water must be eliminated rapidly, yet if it is done violently the quality of the paper suffers accordingly and breaks. The Millspaugh suction roll takes the place of the lower couch roll and the top couch roll with its jacket, guard-board, weights and levers are dispensed with.

"With the suction rolls live pressure is replaced by atmospheric pressure which is both constant and uniform and is applied to a controllable unit of area on the moist paper and the water removed by a combination of three means.

"First, direct pressure on the paper equaling the difference in pressure between that maintained in the suction box and atmospheric outside; second, by physical contact of the air passing at high speed through the paper with the water thus atomized and carried forward with the air; and, third, by actual absorbtion of the moisture in the paper by the air.

"Suction rolls simplify the process of making paper by removing mechanical difficulties and speeding up production and improving the product. If my memory serves me correctly the first Millspaugh suction roll installed in the King Paper Company plant on book paper gave an increased production of 300 per cent per hours the second day. In one mill making heavy papers the output was about doubled. Fine papers have been found more uniform in appearance with water marks clearer. When aniline colors are used there is no difference in the sides of the paper. There is no branch in which the suction rolls have shown greater merit than on news print, yet that branch has been slower to adopt it.

"The combination of suction couch and suction press on news not only maintains quality but has made speed of 1,000 feet per minute possible, with a saving in cost of both felts and wires. Your local manufacturer of paper machines has four high speed news machines at St. Maurice Lumber Company, Three Rivers, Que., equipped with Millspaugh suction couch and suction press operating very satisfactorily in the neighborhood of 1,000 feet per minute."

He concluded by explaining the detail workings of the patent and its effect upon practically every division of the trade.

Traffic Details in the Paper Industry

"Traffic details in the paper industry" was the text of a paper read by Joseph A. Quinlan, traffic expert of the St. Regis Paper Company and chairman of the traffic committee of the Watertown Chamber of Commerce. He gave advice on the question of co-operation with the railroads.

"Quite often shipments are improperly described on bills of lading with the result that exorbitant freight charges are assessed and collected," he began. "Two a certain extent this is due to the use of trade names instead of real names listed in the freight classification. For instance, 'wrappers' for wrapping paper. You cannot be too explicit in the description of the various kinds of paper or paper articles which you manufacture and ship.

"You will continue to pay demurrage just as long as cars are unduly held. A little supervision on your part over the shipping and yard departments might bring to your attention a condition which is unnecessary and costly. I presume most of your mills are working under what is known as debit and credit average agreements and are therefore not entitled to any allowance for bunching in transit, but you should insist upon proper and daily switching service, and keep an accurate record of weather interference so that you may be able to secure an adjustment in event your demurrage bill for the month is incorrect.

"I believe it is a good idea to accumulate as many credits as you can and while you can, for you never can tell what is going to happen before the end of the month to prevent you from handling all of your cars within free time. In case of an accumulation of cars see that the oldest cars are unloaded first.

"I believe in preventing a claim rather than presenting one. Railroad companies, especially the New York Central, are spending annually an enormous amount of money claims for damages and losses in transit. We should co-operate with them to the fullest extent.

"See that old consignment marks are removed; do not load shipments in cars that are not in proper conditon; load freight so that it will not fall against car doors and cause them to bulge. Poorly marked shipments cause delay or loss in transit. Very heavy damage follows the loading of unfit cars both to the customer and the shipper through necessary delay. Really, I cannot conceive the idea of a man wanting to ship paper which is in perfect condition in a car which is so utterly unfit as to render the paper

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useless to anyone. It is a deliberate waste of property and energy.

"Place yourselves in the position of your customer. How would you like to receive a car of paper with practically every roll damaged? How long would you trade with the paper manufacturer which you represent today? I think it is just as much up to the shipper as it is to the railroad company to protect property by the use of proper equipment. You will always find divisional and local representatives of the railroad company willing to work with you on this point. Paper should be loaded in cars strictly according to the rule of the American Railway Association.

"Total claims paid by the railroads of this country for a period of six months was $55,707,753, with a total of 543,393 unadjusted claims. You will note that the yearly average value of property lost or destroyed amounts to about $110,000,000. Freight claims prevented should be the objective of the shipping public as well as of the railroads."

Paper Making in China

Perry D. Taylor, who for 15 years devoted himself to the installation of paper machinery in China and is familiar with the trade in that country, read a very interesting paper on the history of the business in the Orient. He said:

"That the business of paper making should attract the Chinese is not only most natural but there is a growing demand for paper to meet the needs of the modern education the Chinese students are bringing to China from many foreign countries. There are over 600 Chinese students in America alone.

"The reason I say 'most natural' is that the Chinese were the inventors of making paper from artificial pulp. They made paper from pulp as early as the beginning of the Christian era. The Arabs learned the art from the Chinese and practiced paper making at Samorcand in the 7th century. The Moors introduced paper making into Spain and from there it gradually spread through Europe.

"The oldest piece of written paper extant in the west purports to be a mandate of Frederick II, emperor of the Romans, and bears the date of 1242 A. D. The first patent taken out in England in connection with the paper industry was in the year 1665 A. D.

"Besides inventing the article the Chinese excelled in the quality of the paper they produced. India proof engravings, which were so highly esteemed in the days when hand engravings flourished, obtained by pasting a piece of India paper on the face of the home-made printing surface. This particular variety of the article could not be produced by the paper makers in India but it came from Canton, China, in the form of wrapping paper on Chinese silks.

"The Japanese learned the art of papermaking from the Chinese but soon excelled them in many qualities, while the West went far ahead of either by the introduction of machinery to take the place of the simple hand appliances. But to this day the hand-made papers are the best and they are produced by the old Chinese method of now over 2,000 years ago.

"Owing to the fact that the Chinese seldom form companies for business purposes outside of their immediate families they have to learn of our rule that in union there is strength in the business world as well as in matters of state. Today there are thousands of family paper mills in China employing only the members of their immediate families. I lately made a business trip into the interior of Kiangai province, where there are over 300 such mills scattered about the bamboo section of the province.

"Bamboo is made into pulp by first crushing the pole—they do not chip or cut—after which alternate layers of crushed bamboo and layers of unslaked pulverized lime are put into a trench in the ground, then the trench is flooded. Any small boy who has watched at a morter bed can form an idea of the heat and boiling therein. The mass is allowed to stand for three or four weeks before being sorted. At this time the white pulp, the cream pulp and the wrapping paper pulp are placed in separate bins while the uncooked stalks are returned to the next cook.

"The beating or reducing of the fibers is accomplished in large mortars carved of solid rock and men with pestles or stones and a wooden handle refine the stock. The natives also use a small collargang arrangement with water buffalo pulling on the outside to revolve the stones in the rock trench. The pulp is screened through bamboo woven screens by hand.

"Making sheets of paper is accomplished in the usual molds on woven bamboo cloth and the sheets always have imprinted markings like unto Liid Dandy roll marks. In making coarser paper the operator dips his hand mould into the vat and scoops up an unmeasured amount, but in nicer qualities the mould is rested on cleats with the bottom of the vat submerged and a dipper is used to dip up a measured amount of milky pulp. The operator then keeps the mould bottom below the water until, by violent shaking, the sheet is well formed. The mould is then lifted out and set on a table and a pad with handle is pressed on the inside of the mould and the sheet sticks to the pad when lifted out. The pad is then pressed onto the pile of wet sheets and as it is lifted the sheet of paper remains on the pile. After an inch or less of sheets is accumulated a cloth is spread on the pile and more sheets placed on top. Later stone weights are put on the piles to remove more of the water.

"The sheets are dried and calendered by sticking single sheets onto doorlike panels of wood highly polished on one side. After a pannel is full it is leaned outdoors facing the sun until dry and the side next to the panel is highly finished.

"Very little sizing of paper is done in the native mills, as all the product is consumed in China, where printing on but one side and writing with brush is the custom.

"China is greatly handicapped for the want of raw material for the modern paper mills already there, but there is no doubt crops of raw material will soon be raised to fill the need, or that wood will be obtained from Manchuria or Siberia. At present the following raw materials are used in China: Bamboo, rice and wheat straw, lung sea grass, goo tree bark and mulberry twigs saved from the food of the silk worm. The first ground wood mill was started in China last June.

"The most valuable paper stock I have ever used consisted of 80 tons of used paper money and new money thrown out of use at the time of the change from Monarchy to Republic.

"There are now in China eight paper mills with modern machinery, 13 machines in all."

Loading and Filling Materials

Carl C. Schneider, chemist for Knowlton Brothers, read a very highly technical paper on the subject of "Loading and filling materials."

"Fillers and loading agents are added to the paper for several reasons," he said. "Fillers tend to increase the weight of the paper, improve the feel, make a better printing surface, enable the paper to obtain a better finish on calendering, make it more opaque and also enable it to take the printer's ink better.

"A filler is, therefore, not to be considered as an adulterant, with the exception of one single instance, in connection with which a very cheap paper is demanded. The kind of loading material to be used depends on the grade of paper to be made and the qualifications which it has to possess. The principle qualities a filler must possess are color and fineness."

He went into scientific data about details of the science which brought forth considerable discussion as to relative merits of the use of fillers and sizings.

Merits of the Save-All

A. W. Nason, of the Green Bay Foundry and Machine Works, Green Bay, Wisconsin, was the last on the afternoon program. He read a paper explaining the merits of the "Save-All" patent which his company is placing in the mills of the country. He ex-

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plained the enormous saving of stock affected by the device attached to the wet machine.

President O'Connell Speaks at Meeting

National President John H. O'Connell was the honored guest and main speaker at the dinner held in the evening in the grill of the hotel. President Stafford, of the Northern Division, presided as toastmaster and called upon several for impromptu remarks, in addition to Rev. Hubert S. Wood, who was on the regular program with Mr. O'Connell. There was singing, lead by William Jones, and several side lights of exceptional entertaining merit.

Mr. O'Connell attended the meeting on crutches, having recently sustained a broken leg in an accident. He said that had he been given advance knowledge of the success of the meeting he could not have been kept away with both legs broken. He touched on the original organization of the association which was frowned upon by the mill owners as something in the line of a union, but said that the owners now see in the meetings of superintendents a means of much advantage. He said he expected the time would come when the manufacturers would even finance the association activities for the benefits derived.

"I would not have missed the visit to the mills of the St. Regis Paper Company for a great deal. I saw things there I don't believe many of us found in our own mills. I believe the organization has a great future because of the opportunity it offers for exchange of ideas. The superintendent is the most essential part of the industry and should get all possible information.

"Today there are over 500 men in our association in the United States and Canada, and they are the most progressive men in the business. The technical man is necessary but he can't run a mill. We must have practical men as superintendents. I believe the most successful superintendent is the most practical one."

He said he was on his way to Holyoke to assist in the organization of the Connecticut Valley Division. He urged all the men to get back of the organization to the end that a meeting may be held each month instead of twice a year.

F. M. Williams was the first speaker, extending a welcome to the association to the city. He said he was present at the birth of the association and that the birth of nations had nothing on it on the way the organization has grown.

Other Speakers at the Banquet

P. D. Taylor and C. T. Jewell were called upon and spoke briefly, and Mr. Stafford announced the fact that F. A. Fletcher, 85, the veteran paper maker of the section, had been voted honorary membership. Mr. Fletcher spoke in appreciation of the honor. He said he had been in the business from the cradle up, his father having owned a mill in Maine, and that he started active work in 1852. He said that the young men of his day never had such an opportunity as the association offers. He is now retired and residing in this city for several years. His last work was in a mill in the Hudson valley.

Rev. H. S. Wood established his right to be classed as a paper maker because of his early life in paper mill towns in New Hampshire and frequent sojourns in the woods. He said he had observed the process of making paper from the tree to the finished product.

His reminiscence was highly entertaining and his stories were witty and humorous. He compared two paper mill towns in each of which he had resided for three years in his profession. The owner in one town he characterized as a hog and there was discontent among the people, while the owner of the other mill was liberal and fair and always ready to arbitrate disputes. The result was a fine spirit and good citizenship. "We must have labor and capital, but there should be common sense on both sides. The lack of a Christian spirit causes most of the mill troubles," he concluded.

It was decided to hold another informal meeting here some time early in January.

Among those who attended the meeting were the following:

J. H. O'Connell, Diana Paper Company; W. J. Argy, St. Regis Paper Company; Carl McGram, St. Regis Paper Company; P. D. Taylor, Carthage; W. E. Blauvelt, Cameron Truck Company, Brooklyn; Charles McIntyre, Phoenix, N. Y.; J. J. McLean, Sherman Paper Company; Washburn Weston, American Wringer Company, Woonsocket, R. I.; C. T. Jewell, St. Regis Paper Company; Paul D. Luce, Boston Woven Hose & Rubber Co., Cambridge, Mass.; John L. Nolan, Diana Paper Company; Martin Nolan, Diana Paper Company; M. J. Cornell, St. Regis Paper Company; John W. Zeliph, Utica Mutual Insurance Company; E. L. Outterson, Carthage Sulphite Pulp and Paper Company; H. E. Rockwood, Champion Paper Company; C. W. Hayes, Carthage; G. R. Huggins, Industrial Extension Institute, New York; Fred J. Rooney, The Upson Company, Lockport, N. Y.; P. H. Moran, Carthage Sulphite Pulp & Paper Company; Leo. W. Bowker, St. Regis Paper Company.

Thomas H. Ireland, Crane Company, New York; C. A. Parsons, St. Regis Paper Company; C. A. Lura, St. Regis Paper Company; Carl C. Schneider, Knowlton Brothers; D. N. Giddings, Crane Company, Syracuse; James Rice, W. C. Stebbins Supply Company; H. E. Newcomb, St. Regis Paper Company; R. J. Wainwright, Canadian Robert Dollar Company, New York; F. W. Roberts, F. W. Robert Manufacturing Company, Lockport, N. Y.; Thomas R. Riley, Watertown; W. J. Livingston, Dexter Sulphite Pulp and Paper Company; J. E. O'Connell, Dexter Sulphite Pulp and Paper Company; S. R. Turner, Harmon Paper Company; Theodore Safford, Racquette River Paper Company.

Thomas Holt, Racquette River Paper Company; W. N. Karls, St. Regis Paper Company; C. C. Stewart, Newton Falls Paper Company; T. L. Dunbar, Stebbins Engineering & Manufacturing Company; J. J. Grieb, Ryther & Pringle, Carthage; G. H. Spencer, S. K. F. Industries, Inc., New York.

Kenneth Gallinger, Taggart Brothers Company; W. G. Lewis, Knowlton Brothers; C. R. Gibbs, Ryther & Pringle Company, Carthage; M. J. Maguire, Empire Size and Chemical Corporation, Albany; E. W. Krom, Sweet Brothers Paper Manufacturing Company, Inc., Phoenix, N. Y.; R. A. Webb, Albia Box and Paper Company, Troy, N. Y.; C. E. Dawley, National Paper Products Company, Carthage; N. Rigabar, National Paper Products Company, Carthage; H. L. Scherrer, Mumford Paper Mills, Inc., Mumford, N. Y.; H. J. Cadwell, North Counties Coal & Supply Company; F. P. Wadley, St. Regis Paper Company; P. J. Baron, St. Regis Paper Company; J. R. Van Amber, North Counties Coal and Supply Company; J. A. Quinlan, St. Regis Paper Company.

C. T. Wright, Champion Paper Company, Carthage; William Robertson, Empire Size and Chemical Corporation, Albany; C. L. Klages, Knowlton Brothers; Harold Bing, Sandusky Foundry & Machine Company, Sandusky, Ohio; C. H. Plantz, St. Regis Paper Company; H. E. Stafford, Knowlton Brothers; G. McL. Gilbert, Ryther & Pringle, Carthage; Homer M. Rice, E. I. Dupont DeNemours Company, Wilmington, Del.; Edward S. Lansing, Bagley & Sewall Company; M. E. Avery, M. E. Avery Company; Harry C. Kinne, Bagley & Sewall Company; B. H. Treadwell, Treadwell Supply Company; Rev. H. S. Wood, rector of St. Paul Church; Frank M. Williams Apparatus Company; F. A. Fletcher, veteran papermaker, retired.

Big Orders for Textbooks

The *Pulp and Paper Magazine*, which is selling the vocational education textbooks, "The Manufacture of Pulp and Paper," in Canada, made a new record on November 12, when an order for 169 volumes was transmitted to the publishers, the McGraw-Hill Book Company. The volumes in this order will be distributed over Canada, from British Columbia to Nova Scotia, with one going to France and another to Italy.

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Bristol Instruments in the Paper Industry

The leading paper and pulp mills of this country have found that by the application of Bristol Recording Instruments to many processes, they have been able to obtain a better and more uniform product with a consequent improvement in plant efficiency. The great advantage of a Bristol Recording Instrument over a small indicating instrument lies in the following two points:

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—furnish the operator of any process with an accurate guide as to at just what rate and to what extent the process is taking place.

—furnish a filable record of the varying conditions which enter into the process and as a check in the hands of the management to see that the best operating conditions are maintained.

The fact that one large paper plant has over a thousand of these recorders in actual operation is not at all surprising when a few of the many advantages of these instruments are pointed out.

Bulletin BE-306 illustrates some Bristol Recording Instruments that are especially applicable to the paper and pulp industry. May we send it to you?

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New York Trade Jottings

George Harvey, of the Gardner-Harvey Paper Company, Middletown, Ohio, was among the New York trade visitors of the past week.

* * *

The Miller & Wright Paper Company, 65 Duane street, New York, last week announced an increase in its capital stock from $50,000 to $400,000.

* * *

Burl Branch, manager of the Canadian Barking Drum Company, of Toronto, attended the meeting of the News Print Service Bureau in the West Ball Room of the Commodore Hotel last Thursday morning.

* * *

Morris Gintzler, secretary-treasurer of the Pulp and Paper Trading Company, 21 East 40th street, New York, was elected a director of the New Netherlands Bank at a meeting of the Board of Directors, held last week.

* * *

The Charles F. Noyes Company last week leased the building at 379 Pearl street, New York, for L. A. Lehmaire to the Robert Wilson Paper Company, of 280 Broadway, New York, on a net rental basis for seven years. It is the intention of the company to move to its new quarters in the near future.

* * *

A representative of the Stockholm company manufacturing Ruth's Steam Accumulator, a new paper mill invention highly endorsed by Philip T. Dodge, president of the International Paper Company, upon his return last week from Europe, is now en route to New York to arrange representation in this country.

* * *

R. S. Kellogg, secretary of the News Print Service Bureau, has been a busy man throughout the past week, what with the return of Messrs. Dodge and Curtis, of the International Paper Company, the meeting of the News Print Service Bureau and the luncheon following at the Hotel Commodore last Thursday. Monday morning of this week he was visited by Mr. Compton, secretary of the New York Lumber Manufacturers' Association.

* * *

Charles C. Walsey, of 511 West 42nd street, New York, filed a petition in bankruptcy Thursday of last week, listing liabilities of $112,488 and assets of $1,001, exclusive of all stock in the Hercules Paper Company which is pledged with Josephthal and Company, as security for a claim of $25,000. Aside from the latter, the principal creditors listed are: Bertha Walsey, $40,000; Deep Drawn Metal Corporation, $7,500; Walsey Press, $6,000; Sam Shiminsky, $5,000 and Culver Stearns, $4,600.

* * *

The import business in paper and pulp started by E. C. Melby two years ago has been incorporated under the name of Melby, Kuttroff & Co., Inc., and the office moved from 21 East 40th street to 66 Beaver street, New York. The new telephone number is Bowling Green 5714. Mr. Melby continues as president of the new company, and Mr. Percy Kuttroff enters it actively as vice-president and treasurer. Mr. Kuttroff has had fifteen years' experience in the export and import trade.

* * *

As evidence that it pays to believe in signs, the following appeared in the "What Did You See Today?" page of the New York Evening *World* under the heading, "The Hanging of the Sign": I was watching the hanging of a large sign on the block-long building of the Republic Bag Company, Greenpoint avenue. A funeral cortege was halted by the opening of the drawbridge a little further up and one of the mourners, a little girl, stepped from a carriage near me and joined the crowd watching the sign. She refused to leave her post when the funeral procession started again. Finally one of the workers, acting on her mother's plea, picked her up and bore her to the carriage. Her little feet kicked in all directions as she went.—Irving Feinsow, No. 852 Eastern Parkway, Brooklyn. The last sentence of which calls to our mind Stephen Leacock's horseman who mounted his steed and dashed madly in all directions."

P. T. Dodge Says American Mills Compare Favorably

That American mills compare very favorably with those of Europe in both equipment and operation, was the belief expressed by Philip T. Dodge, president of the International Paper Company, who returned to New York last week on the *Majestic* after an extensive tour of the paper making countries of Europe. "Except in the making of a few grades of pulp," Mr. Dodge stated in an interview with a representative of the PAPER TRADE JOURNAL, "the mills of the United States and Canada have very little to learn from those of Europe from a technical standpoint. I saw some very fine pulp mills in Finland as well as in other Scandinavian countries. The bulk of their exports is to the United States, and England is now using a considerable quantity. The combination of cheap wood, cheap labor and wonderful water-powers, both developed and undeveloped, offers unlimited possibilities for future expansion in these countries."

Mr. Dodge added that throughout his tour of Europe, during which he visited practically all of the large paper and pulp mills, he failed to encounter any that surpassed the new International mill at Three Rivers, Quebec, in point of modernity or up-to-the-minute equipment.

Two of the most recent and revolutionizing inventions recently adopted by European mills, were, in Mr. Dodge's estimation, the vapor accumulator and the electrically heated steam boiler. The former, which he commended highly at the luncheon of the News Print Service Bureau held last Thursday at the Commodore Hotel, he further endorsed as a very valuable application. "By the use of the steam accumulator," he said, "a paper mill is enabled to keep its boilers running to the maximum at all times and thus may use a much smaller boiler plant. I saw fifteen or twenty of steam accumulators in operation in European mills and am convinced they will effect a great saving in production costs when universally adopted. The representative of the Ruths Steam Accumulator Company, of Stockholm, is now on his way to this country."

Besides studying the paper mills of Europe, Mr. Dodge visited the large English and German plants of the Mergenthaler Linotype Company as well as many of their sales agencies.

Pulp and Paper Mill Lubrication

The Vacuum Oil Company, 61 Broadway, New York, has just published an important book entitled "Pulp and Paper Mill Lubrication." The purpose of this booklet is to improve the operating conditions in the mills. It is a notable step forward in the field of pulp and paper mill operation.

"Pulp and Paper Mill Lubrication" has been a long time in the making. Considerable research work is presented in the information presented within its covers. It is authoritative. It is not a Vacuum Oil Company effort only but represents the combined knowledge of representative manufacturers of pulp and paper mill machinery and internationally known pulp and paper makers, who were brought into consultation, of lubrication engineers who have specialized in this industry, and of the Vacuum Oil Company's technical department, whose authority on machinery, oils and their application is internationally known.

Copies of this booklet can be obtained by any person associated with pulp and paper mills by addressing the Vacuum Oil Company, 61 Broadway, New York.

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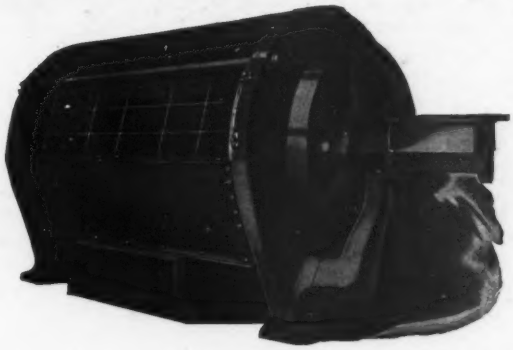

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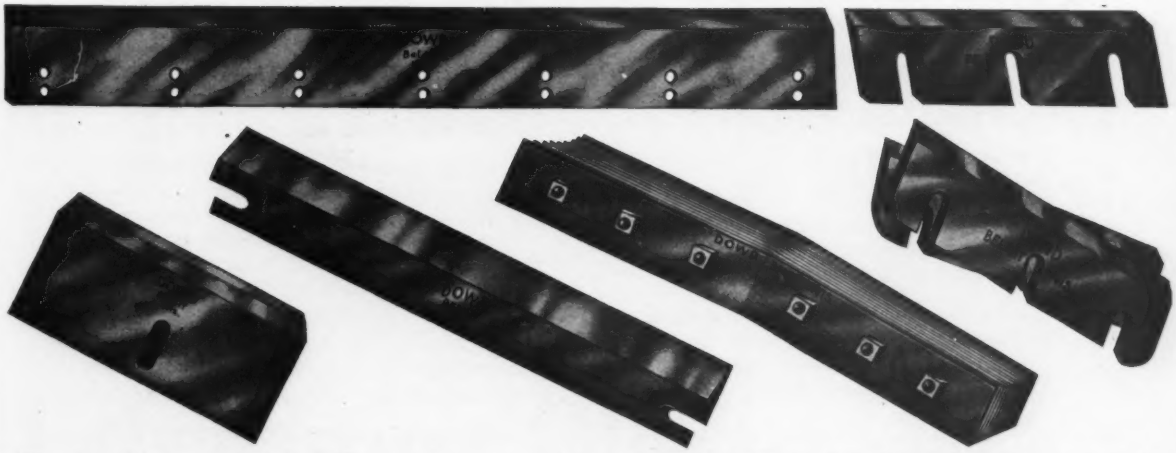

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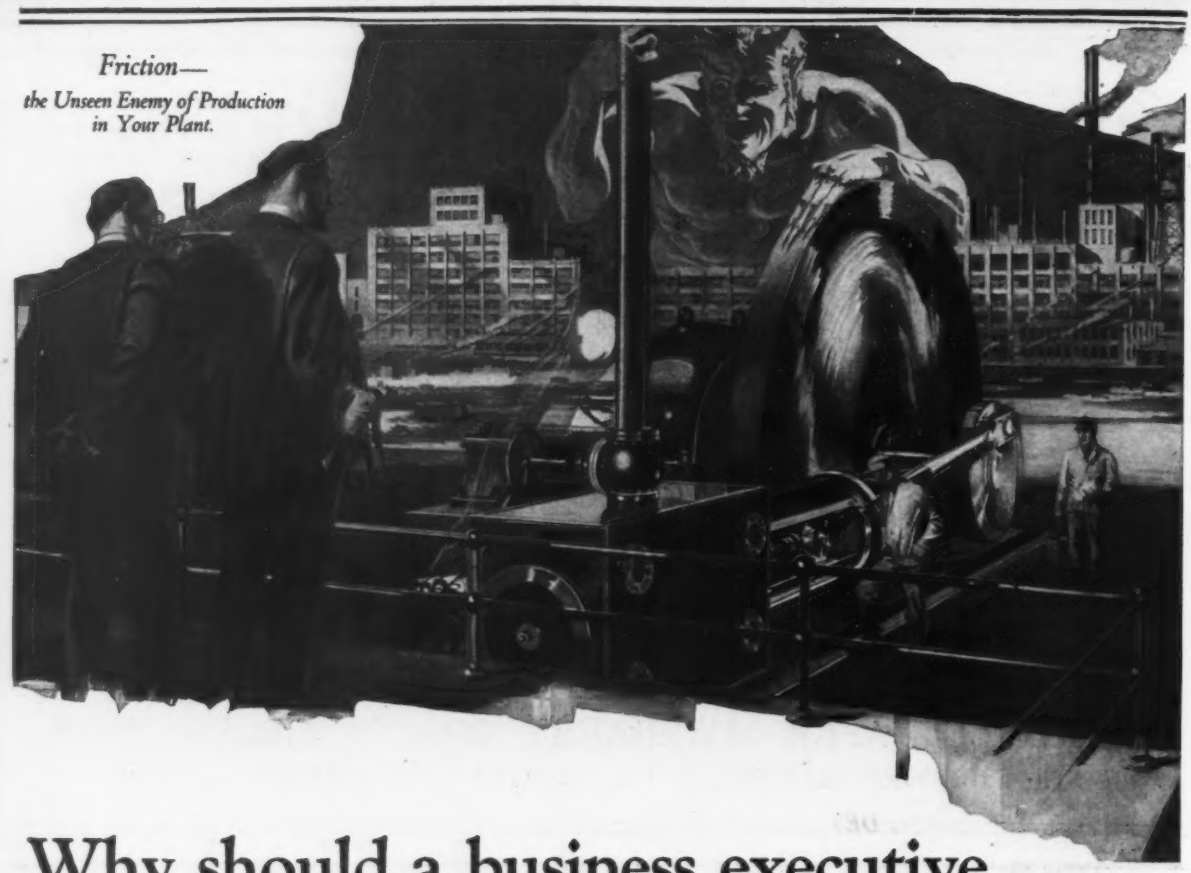

Why should a business executive bother his head about lubrication?

A BUSINESS executive cannot be expected to know all the technical details of his plant operations.

But until he gets a broad grasp of scientific lubrication, he has a very weak hold on both power losses and operating costs.

Perhaps you will be interested to check your own knowledge as follows:

Do you know that each engine and machine in your plant is receiving the oil suited to it?

Do you know the insignificant annual cost of your lubrication compared with the cost of your equipment which this lubrication should protect?

Do you know that a large percentage of your expenses for repairs and replacements are directly chargeable to incorrect lubrication?

Do you know that preventable friction, causing power losses throughout your plant, can be controlled by Correct Lubrication?

Do you know that high quality oils always prove the cheapest oils in the long run?

Do you know that the Vacuum Oil Company has made Correct Lubrication an almost exact science and can introduce substantial economies in your plant without a dollar's added cost?

If you would like to have before you a clear-cut survey of the lubricating problems in your plant, we propose this:

Upon request we will send one of our men to your plant. He will make a careful survey of your equipment and operating conditions. Later, after our Technical De-

VACUUM OIL COMPANY

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partment has studied and analyzed his findings, we will forward to you a comprehensive Lubrication Audit of your entire plant. For further details see column below.

Any recommendations which we may make for more scientific lubrication will be based on our 56 years' specialization in the manufacture and application of lubricating oils. Our service covers the world. An inquiry to our nearest branch office will receive prompt response.

The Lubrication Audit

Explained Step by Step in Condensed Outline

INSPECTION: A thoroughly experienced Vacuum Oil Company representative in co-operation with your plant engineer or superintendent makes a careful survey and record of your mechanical equipment and operating conditions.

RECOMMENDATIONS: We later specify, in a written report, the correct oil and correct application of the oil for the efficient and economical operation of each engine and machine.

This report is based on:—

(1) The inspection of the machines in your plant.

(2) Your operating conditions.

(3) Our 56 years of lubricating experience with all types of mechanical equipment under all kinds of operating conditions throughout the world.

(4) Our outstanding experience in manufacturing oils for every lubricating need.

CHECKING: If, following our recommendations in this audit, you install our oils, periodical calls will be made to check up the continuance of the desired results.

FOR THE ABOVE FREE SERVICE address our nearest branch office.

Domestic Branches:

New York *(Main Office)*	Boston	Chicago	Philadelphia
Detroit	Pittsburgh	Indianapolis	Minneapolis
Des Moines	Buffalo	Rochester	Albany
	Dallas	Kansas City, Kan.	

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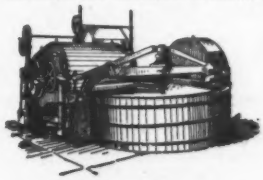
Lubricating Oils

A grade for each type of service

A Lubrication Audit

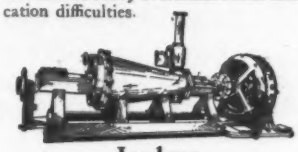
in the *Paper Industry*

would point out the Correct Lubrication for the important machines as follows:



Beaters

Beater bearings, generally unnecessarily hot, will run cooler if the stock leakage is eliminated and oiling is regularly attended to. The regular use of **Gargoyle D.T.E. Oil Extra Heavy** overcomes beater lubrication difficulties.



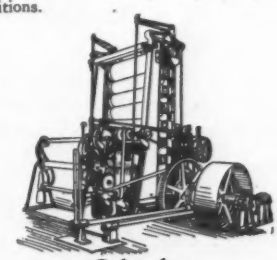
Jordans

Because of the high speeds and heavy pressures which are always present, and the side pull on bearings when belt driven, it is necessary to use a heavy bodied oil. For this purpose we recommend **Gargoyle D. T. E. Oil Extra Heavy.**

Paper Machines

For bearings of the paper machine, subjected to induced heat from steam used for drying, an extra heavy bodied oil is required such as **Gargoyle D. T. E. Oil Extra Heavy.**

The rolls at the wet end subjected to moisture and heavy pressure demand a compounded oil which will resist the washing tendency and maintain a perfect oil film. We recommend **Gargoyle Voco Engine Oil No. 1** for these specially trying conditions.



Calenders

Paper machine production is directly dependent upon uniform speed. Calender bearings are subjected to heavy pressures and high frictional heat. The regular application of **Gargoyle D. T. E. Oil Extra Heavy** insures uniform speed, and consequently minimizes "broke."

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Editorial

Vol. LXXV New York, November 23, 1922 No. 21
FIFTY-FIRST YEAR

Mr. Dodge Returns From Europe

After a three-and-a-half months' trip abroad, Philip T. Dodge, president of the International Paper Company, returned to New York last week. He returns to find local and national industrial conditions in a much more encouraging state than they were when he sailed away on the *Aquitania*, August 1. At that time industry was in the throes of two nation-wide strikes. There was an appalling scarcity of coal and the railroad workers were still holding out. Paper mills were panicky as fall business approached and adequate raw materials were lacking. Then, too, the tariff issue was hanging fire and business had an unsettled aspect.

Now that these handicaps to normal business have been largely removed, the general industrial outlook must look considerably better to Mr. Dodge. Never in the world's history has the demand for news print paper been so acute. The report of the Federal Trade Commission, which will be issued next week, will show that the consumption of news print for the current year, through the month of October exceeds that of 1920, the previous record year, by approximately 15 to 18 per cent. The enormous demands of publishers during the last six weeks will be clearly reflected in the comparison of October's consumption record with the same month in 1920 and 1921.

This demand is not of the mushroom type. It is based upon the strides which have been made in the basic industries in recent months. Commodity prices are lower, their production is being carried on in greater volume, and manufacturers are anxious to advertise. Meanwhile, advertising rates are as high as they have ever been. There is no immediate prospect of a decline in rates because the advertiser is today getting his full value in the increased circulations of newspapers and periodicals. National advertisers have objected to the prevailing high rates in a few instances, but publishers have more than made this up, resorting to every conceivable circulation-building device to justify these rates by considerably enhanced subscription lists. Increased Sunday supplements, special radio sections, feature pages, expanded comic sheets and competitions galore have served to gain thousands of additional readers and thus to broaden the scope of the advertiser's field. This expansion of both advertising and general matter in newspapers the country over has resulted in almost double-sized editions in many cases.

As president of the largest company in the world which manufactures news print paper, Mr. Dodge should be well satisfied with the turn fundamental conditions have taken since he left for Europe.

American paper manufacturers will be interested to hear that Mr. Dodge believes the mills in this country compare very favorably with those of Europe. As is stated in another part of this issue, Mr. Dodge remarked to a representative of the PAPER TRADE JOURNAL that from a technical standpoint the mills of the United States and Canada had very little to learn from their European competitors. This is encouraging. For many years the paper making countries of Europe admittedly have "had the edge on" the United States. Their unlimited water powers as well as their cheap labor and raw materials have given them a natural advantage, and they have supplemented this with technical skill that has been the result of years of research and experiment. Until recently America has lagged slightly behind in the adoption of new inventions and scientific discoveries to expedite paper manufacture. Lately the technical end of paper production has received more attention. To this end the PAPER TRADE JOURNAL has conducted a section of ten pages or more weekly under the auspices of W. J. MacNaughton, secretary of the Technical Association of the Pulp and Paper Industry.

Mr. Dodge's statement that American mills now compare favorably with those of Europe—except, perhaps, in the production of a few grades of pulp—may be taken as evidence that the manufacturers of this country and Canada are alive to the most recent developments either here or abroad and are rapidly putting the latest discoveries into practice. In endorsing two of the latest improvements he saw in Europe, the steam accumulator and the electrically heated steam boiler, Mr. Dodge has made a contribution to the technical knowledge of America's paper industry. Many new foreign devices fall far short of their goal in actual practice, but when experienced American paper men take the time from their work in this country to go abroad, study mill conditions there thoroughly and intensively, observe the latest technical improvements in a working state and then impart their observations and beliefs to their fellow manufacturers in this country, they are doing the country and the entire paper industry a service. If more able executives such as Mr. Dodge, Mr. Curtis, Dr. Baker and Mr. Sisson will continue the splendid work they have done in bringing the foreign paper situation home to us, it will not be long before Europe will be measuring its progress with an American yard-stick, using our technical efficiency as its criterion.

Employment and Wages in Paper Mills

The increasing prosperity in the paper business is reflected in some figures just compiled by the Bureau of Labor Statistics of the Department of Labor at Washington, showing the employment and wages paid in 73 paper and pulp plants in the months of October, 1921, and October, 1922.

In October, 1921, there were 22,643 persons employed in these mills as compared with 26,493 employed in the same month of this year, showing an increase of 17 per cent. The payrolls also increased from $537,754 in October of last year to $648,686 in the same month of this year, showing an increase of 20.6 per cent.

The Bureau also shows a comparison between employment and wages paid in this industry in the months of September and October of this year. According to the Bureau, in 98 factories there were 34,922 persons employed as compared with 36,352 in the same month of this year, showing an increase of 4.1 per cent. The payrolls in these paper mills amounted to $829,227 in September as compared with $888,674 in October, showing an increase of 7.2 per cent.

There were 58 paper box factories employing 9,410 persons in September as compared with 9,796 persons employed in October, showing an increase of 4.1 per cent. The wages paid in these fac-

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tories in September amounted to $193,469 as compared with $203,954 in October, showing an increase of 5.4 per cent.

E. J. Jones Made Manager at Kapuskasing

[FROM OUR REGULAR CORRESPONDENT]

NEENAH, Wis., November 20, 1922.—Hon Evan J. Jones has been appointed manager of the Kapus Kasing plant of the Kimberly-Clark Company.

Mr. Jones is the son of Welsh immigrants who came to this country and located in the anthracite coal fields of Pennsylvania. His father's life was wholly spent in and around the coal mines and, at the early age of 9 years, Mr. Jones started to work at the mines. He continued to work in and around the mines until he was 17 years of age, with little or no opportunity for schooling. If he attended at all during these years, it was the days following Christmas and before spring. His public school life ended before he was 16.

A year or two later, he started to work his way through normal school and college, which he succeeded in doing, and, at 23, he was admitted to the bar. While he is a lawyer by profession and has been at the head of a firm with a large, extensive practice, his personal interest has been largely given to the practical and legal end of large lumber companies, who have been operating in a number of states and who are now operating in New York State in the manufacturing of lumber and getting out of pulpwood.

Mr. Jones was one of the men who originally interested the Kimberly-Clark Company in the Spruce Falls proposition at Kapuskasing and he enters upon his new duties remarkably well equipped in training and experience.

He was a member of the Sixty-sixth Congress from the 21st Pennsylvania district and was re-elected to the Sixty-seventh Congress with the largest majority ever given to a candidate in that district.

S. L. Willson Goes With American Writing

[FROM OUR REGULAR CORRESPONDENT.]

HOLYOKE, Mass.—S. L. Willson of the Graham Paper Company has been elected vice-president and general manager of the American Writing Paper Company. George A. Falliver, president of the American Writing in announcing Mr. Willson's new connection, said:

"His achievements and outstanding abilities have won for him the universal recognition and respect of the whole paper industry and are a sufficient guaranty of his eminent fitness for the responsibility he now assumes.

"His success in the paper merchandising field has great distinction. His governmental service as a member of the War Industries Board tested severely his acumen and judgment, and his acquitment of the duties to all alike—the War Board, the papermakers, the merchants, and the paper users—was most auspicious and phenomenal.

"His sound accomplishments in paper standardization, his sane progressiveness, his unusual appreciation of the interdependence that necessarily exists among the various phases of the paper-manufacturing, paper-distributing, and paper-consuming aspects of the whole industry, mark him a natural exponent of the work to which this great paper service manufacturing institution has committed itself. He assumes his active duties on January 1 next."

To Make Paper at Norristown

[FROM OUR REGULAR CORRESPONDENT]

NORRISTOWN, Pa., November 20, 1922.—The old plant of the Norristown Coal and Ice Company has been bought by E. F. Woodhead, of Swarthmore, who has a force of 20 men making alterations preparatory to the installation of a plant for the manufacture of paper.

Boston Paper Trade Association Meets

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., November 20, 1922.—Those who failed to attend the Annual Fall meeting of the Boston Paper Trade Association at the Exchange Club on Wednesday evening of last week missed a rare treat. Not within the memory of any member of the "Old Guard" has a speaker at any of the previous functions of the association held his audience in absolute quiet for a two-hour period and then have his audience rise as one and demand for more. The Rev. George Adam, of Montreal, a former staff officer of the British Ministry of Munitions and aide to Lloyd George, was the man who attained this distinction.

With the mellowness of speech characteristic of the Scotch, backed by a force of sincerity he carried his audience on a word tour through the life of England's great statesmen. Completely spellbound by his personal magnetism and his narrative, his hearers at the close of his talk, in a body arose and amid deafening applause, called for more.

It was an inspiring moment and the reverend gentleman responded with the singing of Scotch melodies.

During the usual excellent dinner served at the club, Miss Caliste Conant, a well-known musical artist, enlivened the occasion with vocal solos and led the assembly in chorus singing.

During the meeting announcement was made of the death on Monday last of W. A. Whitney, a long time member and formerly general manager of the Emerson Paper Company of Sunapee, N. H., and a silent toast was drunk to his memory.

The following were appointed a nominating committee to select officers to be elected at the annual meeting next March: W. F. McQuillan, chairman; Chas. L. Bair, John E. A. Hussy and Col. Chas. L. Proctor.

Among those present were the following: John A. Andrews, George Adam, F. Bendel Tracy, Joseph D. Snell, F. W. Power, C. T. Crocker, Norman Harrower, Frank C. Cate, Percy E. Weston, W. H. Furbish, A. A. Tanyane, of PAPER TRADE JOURNAL, John Munroe, E. R. Lyman, M. L. Madden, Ralph R. Case, T. H. Casey, Waldo E. Pratt, Edwin P. Lindsay, E. H. Stone, Wm. A. Merrill, I. C. Young, E. E. Eaton, C. P. Chamberlain, Mark H. Warren, Walter P. Simonds, Harry R. Woodward, Charles Wood, Herbert C. Ham, F. Henry Savage, Arthur C. Ham, W. J. Bigley, Fred S. Dolbeare, Perry B. Von Olker, W. H. Loud, A. L. Melcher, H. Ross, W. H. Helton, Arthur C. Hall, Edward C. Little, Don Weston, Irving N. Esleeck, William E. Fay, A. F. Fay, J. A. Lowe, T. Thompson, E. C. Robertson, John Kelly, George T. Shindlidge, Wm. B. Livermore, George Cadwell, E. P. Hay, George D. Allen, Carleton Knight, J. P. Jordan, Herbert L. Carter, Herbert S. Brown, H. W. Morgan, Edwin Foster, Charles S. Proctor, John E. A. Hussey, A. P. Ramage, Charles W. Fields, Charles S. Baird, Arthur L. Hobson, Floyd H. Blackman, E. L. Cummings, Henry W. Stevens, W. W. Jenks, L. E. Maglathlin, Chas. H. Coye, Arthur M. Burr, P. K. Mohun, John J. O'Brien, H. A. Lindenberg, James D. Hefferman, Herbert J. Casey, S. R. Whiting, E. C. Walker, Frank B. Cummings, W. F. McQuillan, Horace B. Sargent, Samuel H. Roberts, J. W. Knowles, G. E. Emerson, Thomas W. Estabrook, Gilbert H. Gleason, E. D. Bement, William B. Stevenson, Ralph Frothingham.

Pine Tree Pulp Co. Gets Pulpwood

[FROM OUR REGULAR CORRESPONDENT.]

BOOTHBAY, Maine, November 20, 1922.—The Pine Tree Pulp Company of South Gardiner plans to work over 350 acres of woodland on Linekin Bay, Boothbay, for its lumber, it has been announced here.

The pulpwood will be shipped on the Damariscotta River, on one side, and on the Little River, on the other side. Donald Sewall of Bath and J. Harold Machette, formerly of Topsham, are connected with the company.

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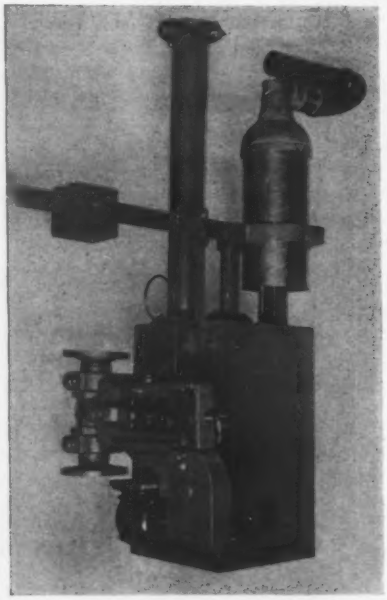
The Trimbey Automatic Consistency Regulator

(Patented)



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UNIFORM "brushing" action at the Jordan means improved quality.

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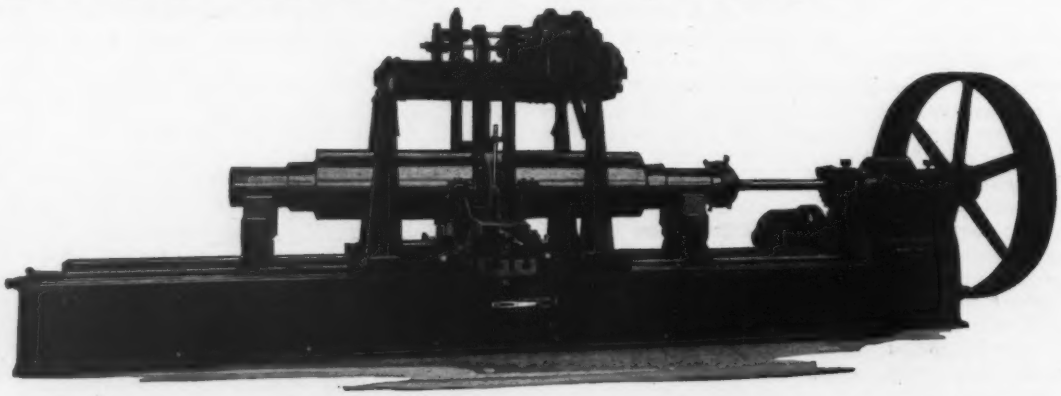
LOBDELL

ROLL GRINDERS are the only machines of the kind fitted with automatic crowning device which develops a perfect crown without the use of a guide or former and repeated trying for the correct setting.



LOBDELL Calenders are equipped with Patent Electric Motor, Hydraulic or Ratchet Lift all operated from the floor.

LOBDELL Micrometer Calipers are handy and accurate.

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Section of the

Technical Association of the Pulp and Paper Industry

AN ORGANIZATION FOR THE ENCOURAGEMENT OF ORIGINAL INVESTIGATION AND RESEARCH WORK IN MILL ENGINEERING AND THE CHEMISTRY OF PAPER, CELLULOSE AND PAPER-MAKING FIBERS GENERALLY; IT AIMS TO PROVIDE MEANS FOR THE INTERCHANGE OF IDEAS AMONG ITS MEMBERS IN ORDER THAT PROCESSES OF MANUFACTURE MAY BE MADE MORE EFFICIENT AND IMPROVED ALONG TECHNICAL LINES.

Conducted by W.G. MacNAUGHTON, Secretary

DISCUSSION ON BROKE AT FALL MEETING OF T.A.P.P.I.

(Continued from last week)

CHAIRMAN WOLF: We will pass on to the next subject of broke, and in order to start the ball rolling I will ask Mr. Bearce to explain to us the cost sheet which he has gotten up to show in dollars and cents the cost of broke at different parts of the operation. Would you be good enough, Mr. Bearce, to give us that?

G. D. BEARCE: Mr. Chairman, perhaps the easiest way to follow this would be to take up the chart shown. We assumed that 600 tons of supercalendered paper at a cost of $85 a ton was delivered to the supercalenders and 570 tons were produced by the calenders, and that cost was $95.47. The conversion cost was $6.00. The difference of $4.47 was termed the loss due to broke. In other words, dividing through your local costs the actual dollars and cents, first by 600 tons, which was delivered to the supercalenders and then by 570 tons, which was produced by the supercalenders, and adding the conversion cost, the difference in cost per ton was the broke cost. The 570 tons was then delivered to the cutters and rewinders, 220 tons to the rewinders, at a cost of $95.47, and 350 tons at the same price to the cutters.

Following down through the rewinders, we find that the conversion cost is $5.50, and the broke loss $6.00, and the 207 tons produced in finished rolls had an ultimate cost per ton of $106.97.

The same method of calculation follows the cutters.

The differential is the increased cost due to the fact that a part of the paper was spoiled and had to be returned to the beater. That increased cost is made up of two things: The dissipated effort that was used to make that paper, plus the material value of the broke. The fact that the usual method is merely to charge back the broke in tons and disregard the material value makes this a very simple way of bringing out the loss, and it works out satisfactorily on the cost figures.

The general idea is to bring out the fact that when you do break up paper you are losing money all the time, and the more paper you break up the higher the cost per ton of the product, and to bring out the fact that the broke loss is a very serious problem in every mill.

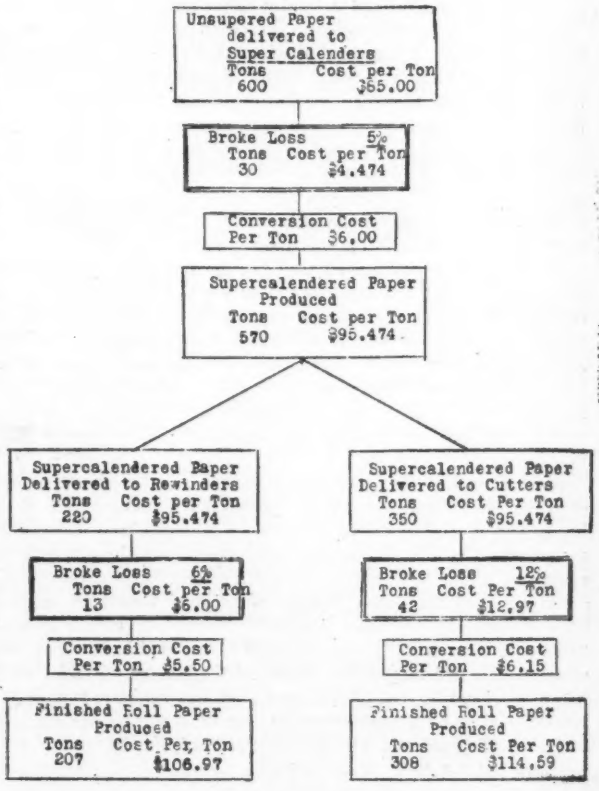
CHAIRMAN WOLF: Are you ready for the discussion on this cost matter?

J. N. STEPHENSON: May I ask where you get the value of $4.47 for the broke? It seems to me during the time they are producing that broke they have been operating their supercalendered and paying their labor, and that the cost of that should be figured on the cost of making supercalendered paper.

CHAIRMAN WOLF: The 600 tons, if divided into $51,000, gives

COST CHART Indicating

LOSSES DUE TO BROKE



Furnish	Percentage
Sulphite	25%
Soda	25%
Old Paper	30%
Broke	20%
Clay	20%
Total	120%

$85 a ton. If 570 tons produced by the supercalender is divided into $85,000, you will get another cost per ton ($95.47), which

would be the cost of the paper produced. The purpose is to bring out distinctly the loss due to shrinkage; in other words, if you express it as a figure due to shrinkage it means more, it sticks out like a sore thumb, which makes us sit up and take notice.

If there is no shrinkage at all, there would be no figure there for this item. In this case, where there is a shrinkage of 5 per cent, it amounts to an increase of $4.47 per ton. If the shrinkage was 10 per cent, it would be double that amount. It is true that it is just a convenient way of showing it and indicates the direct effect of the making of broke the cost of the finished product.

CHAIRMAN WOLF: Another suggestion was made as to the advisability of showing in dollars and cents the cost of the stock shrinkage in making the paper. The same method could be applied as has been described here. Suppose you used 120 pounds of material and you actually get 100 pounds of paper. Now, the difference between the total cost of the raw material put in and what you actually get out could be shown also as dollars and cents. What the committee would like is a free discussion as to the proposed method, so it can go back and report at the next meeting the consensus of opinion as to how it should be shown.

Mr. Carruth, you had some pretty definite ideas on this when you wrote to us.

H. P. CARRUTH: Mr. Wolf, in regard to putting the total amount of stock required to produce paper into dollars and cents, that could be done, but it would require quite a little figuring. Taking the figures you mentioned, 118 pounds of material to produce 100 pounds of paper. We use a similar figure and get somewhat similar results in our calculations. In checking up where those 18 pounds go to, quite a good deal of what appears to be extra tonnage of material is not really such; in other words, we are not losing 18 pounds of stock; part of it is due to the difference in the moisture content. For instance, our paper is made with 5 per cent moisture; but the clay put in contains 10 or 12 per cent. That 5 to 7 per cent additional moisture in the clay appears in those 18 pounds. The same thing applies to almost all the other materials. I venture to say that a large part of that 18 per cent which is apparently lost from such figures is really moisture.

There is one place, however, where we use a dollars-and-cents figure that is perhaps pertinent to mention here, and that is in checking the operation of our save-alls. For instance, a save-all in proper state of repair may permit a loss of one pound per thousand gallons of effluent. If the adjustments are not made properly, the loss can easily run much higher. We found that that matter was so important in dollars and cents to us that we put on an extra man in our mill, whose main and almost only duty is to test the save-alls to keep them up.

We have asked our superintendents and foremen to get a copy of these reports on the save-alls, expressed as pounds lost in 24 hours and in dollars lost per 24 hours, and we have found that the emphasis on the dollars and cents helps keep them in efficient operation.

In regard to the general subject of broke, I have been credited with placing emphasis on it before the committee. I have done so because it was brought out forcibly to me within the last few months. We had been seeing figures of the amount of broke made for a good while, but the figures had not registered until we actually weighed the broke from all sources, including our machine broke which previously we hadn't any record of. In consequence, we have cut out total broke, including machine broke, to a point below where our finishing broke was before. I don't dare mention any figures, but it was a devil of a lot of stuff. (Laughter.)

The reason the committee should go at the broke angle of the waste question is because, in the first place, it is present in all of our mills. In the second place, it can be attacked in a small way, to start with. In any mill the saving effected from the care and attention and investigation will be so large and so immediate that it will concentrate the effort of the management upon the study of waste in general as nothing else. There is no way to convince a man quite as easily as to show him where he can pick up a good round sum of money that he has been throwing away.

Our experience has proven conclusively that that can be done almost at once. For instance, when we first started the investigation the easiest, quickest place to look for a curtailment of broke was in the finishing room. The first thing was simply a little conversation between the superintendent and myself, and we cut our shavings from an inch to three-quarters of an inch. That doesn't sound very much, but it amounts to quite a saving in the aggregate when you figure it out. It means that the superintendent and the foreman has to watch the operation a little more closely. We are running three-quarters of an inch now, and the chances are that it ought to be cut down further to one-half an inch. We went through that process in all of our rooms.

I would like to see this Paper Mill Committee go from the study of effluents to the study of broke, and I am sure the study of effluent will proceed in due course if you pursue that method.

CHAIRMAN WOLF: I take it you are in sympathy with the method of showing the records we are suggesting by the actual costs?

H. P. CARRUTH: It has been suggested to me that the percentage method has one distinct advantage over the dollars and cents method. If a mill is making several grades of paper, the dollars and cents value would change with the grade of paper, whereas the absolute efficiency would be shown by the percentage of broke and useful for comparison.

CHAIRMAN WOLF: Mr. Taylor asks for information as to whether any one has tried going direct to the finishing room from the paper machines, without going to the rewinders.

H. S. TAYLOR: It is understood mills in different sections have been doing it. It is a question of whether the saving in broke, etc., saves in the operation.

CHAIRMAN WOLF: I take it this is a thing you would like to have the committee take up, to get more infrmation upon it. Are there any other points in connection with broke waste?

E. C. TUCKER: Mr. Chairman, it seems to me that there is plenty of room for a questionnaire on broke and broke waste. One of the very important things for a fine mill is the figure that Mr. Carruth mentioned: The number of pounds of raw material paid for in any one year, against the number of pounds of product definitely shipped out. Every fine mill has that figure. It would be very valuable for mills that were making similar grades of paper to compare those figures, and very instructive to all of us. The question of broke in a fine mill is a question that perhaps we pay much more attention to than is the case in a book mill.

All of the broke from the machine room, for example, is supposedly weighed back. We also know the broke from the finishing room. I might say that my experience with finishing room broke is rather similar to Mr. Carruth's. I went at the proposition in rather a different way, however. We were making opproximately 4 per cent of broke on supercalenders, another 3½ to 4 per cent on cutters. By showing every month the exact figures as to the percentage of broke made, both on the supercalenders and on the cutters, we reduced the supercalender broke to 2½ and the cutter broke to 2 per cent. There is a very large amount of money to be saved in that kind of an investigation. It frequently is almost startling.

Following discussion of the air dry and bone dry basis for pulp in purchases and mill accounting, the following motion was made and carried, two members voting in the negative:

That it be the recommendation of the Waste Committee in session assembled, that the bone dry basis be the established basis and that the recommendation be transmitted to the Technical Association as a whole and referred to them for action.

CHAIRMAN WOLF: If there is nothing further on the problem of broke waste, the meeting is open for a general discussion on all waste problems. Boiler house waste and stock shrinkage have been suggested, and anything else may be taken up.

XUM

THE REMOVAL OF THE ODORS IN SULPHATE PULP MILLS*

By Carl G. Schwalbe

The author has patented a process for the removal of the very disagreeable odors that are produced in the course of the manufacture of sulphate pulp. This process is patented in Ger. Pat. No. 319,594. Up to the present time the process, which consists in causing the gas to pass through wood or straw, has been tried out on a practical scale with satisfactory results in certain Swedish mills only. But recently it has been possible to put the process to a real practical test in certain German mills. A small testing apparatus was installed. A part of the evil-smelling gases was put through this apparatus in contact with wood or straw. Before going into a discussion of the apparatus, the description of the experiments performed and the results obtained therefrom, the author states that he has some interesting remarks to make regarding the nature and the origin of the evil odors.

The Nature and Origin of the Odors

Even when pure caustic soda is used to treat wood and straw, characteristic odors are produced in the digestion operation. The cause of these odors is to be found in the albumen (protoplasm) content of the raw materials. The albumen contains sulphur, and this is converted into mercaptans or sulphides during the course of the digestion. According to the view commonly accepted, methyl alcohol is formed in the first place. This is sulphurized by being heated under pressure, being converted into methyl mercaptan CH_3SH, dimethyl marcaptan CH_3SHCH_3 and dimethyl sulphide CH_3SCH_3. In the digestion of straw there are also produced ammonia and strongly smelling amines, such as, for example, methylamine and trimethylamine, which originate from the nitrogen content of the albumen.

When sulphide of soda is used in the digestion process the quantity of sulphurated materials produced is increased, generally in a direct proportion to the amount of sulphide of soda used, due to the fact that larger amounts of the methyl alcohol can then be converted into sulphurized products. These materials are formed during the course of the digestion, and when the digester is blown off the gases, which are not condensed, reach the vent pipe and, accordingly, are set free into the air directly or through the stack.

Considerable Amounts of Mercaptans are Formed

These evil-smelling substances are also evolved in the recovery of the waste liquors when they are evaporated in pan evaporators, in rotary furnaces or smelting furnaces. The quantity formed depends on the manner in which the waste liquors are worked up, not taking into consideration the effect of the quantity of sulphide of soda used in the treatment of the raw products. In the literature there are various data given regarding the quantity of mercaptans produced which are extraordinarily variant. It is reported that the Swedish plant at Orebro, which produces 16.5 tons of cellulose and 350,000 cubic meters of waste gases in 24 hours, discharges into the air 4.5 kilograms of mercaptans in the furnace gases, 0.17 kilogram of mercaptans in the digester gases and 2.3 kilograms of methyl sulphide. In the recovery plant other gases are evolved, such as sulphuretted hydrogen and sulphur dioxide, the proportions of which are dependent on the way the furnaces are operated.

Method of Operating the Furnace and Production of Evil Smelling Gases

When only a small amount of air is allowed to enter the furnace, then, since carbon dioxide is formed from the organic substances in the liquor, more sulphuretted hydrogen is formed from the sulphide of soda. On the other hand, when a large excess of air is fed to the furnace then a larger proportion of sulphur dioxide gas is formed from the sulphuretted hydrogen produced. There are, however, various solid substances mixed with the furnace gases, held in a sort of mechanical suspension. These substances, suspended in the form of a very fine dust, are sulphate of soda, sulphite of soda, silicate of soda, sulphide of soda, carbonate of soda and small particles of carbon, which are derived from the partly burnt organic matters which come into the stack along with the stream of gas. In the Obrebro plant, in addition to the methyl mercaptan and the methyl sulphide, there is given off from the recovery plant about 245 kilograms of sulphurous acid, 140 kilograms of sulphuretted hydrogen and 2,100 kilograms of sulphide of soda in 24 hours.

Theory of the Absorption of Gases by Wood and Straw

The use of vegetable matter, such as wood and straw, for the removal of the odors in the waste gases of sulphate pulp mills is founded on the investigations and study of the capability of wood to absorb gases that have an acid and a basic reaction. The power of wood to combine with acid substances is extraordinarily great, as even the slightest concentrations of hydrochloric acid, for example, diluted with a very large volume of air, are absorbed by it.

As the mercaptans are mainly responsible for the bad odor of the gases, experiments were undertaken to determine whether this slightly acid substance will likewise be absorbed by wood. The experiments showed conclusively that a full absorption of the mercaptans, sulphides, etc., could be affected in this manner.

Nature of the Absorption Process

The disappearance of the odor is associated with something more than a mere absorption of the evil-smelling mercaptans. When a piece of wood, which is saturated with mercaptans and sulphides, is subjected to the common caustic soda treatment there is no sign of the formation of any bad odors again. The mercaptans are destroyed. An explanation of this is found in the theory that at the very start the mercaptans are absorbed by the wood in such a manner as to penetrate into the very internal structure of the same, and thereby they are subjected to a concentration effect. In this high state of concentration the mercaptans are no longer able to withstand the oxidizing action of the atmospheric oxygen, which is perhaps in a similarly concentrated form within the pores of the wood. Consequently, the wood has both absorptive and concentrating action on the odoriferous materials, whereat finally a chemical oxidation sets in due to the atmospheric oxygen. In this way the badly smelling substances are finally annihilated.

Increasing the Effectiveness of the Wood

In order to increase the effectiveness of the wood, and at the same time lengthen the time that it may be used for this purpose, small amounts of chlorine gas may be added to the gases that are to be purified, although, as has been said, the odors can be removed as well without the addition of the chlorine. The addition of the chlorine gas is for the purpose of supplying an additional oxidizing agent. Others can be used, but at the present time chlorine gas is the cheapest for this purpose. The chlorine, like the mercaptans, is absorbed into the inner structure of the wood. Consequently, the concentration of the chlorine is increased in the same manner as that of the odoriferous gases. Naturally, under the condition of high

*Zellstoff und Papier, 1922, 175 to 178. Translated by Ismar Ginsberg, B. Sc., Chem. Eng.

concentration of chlorine and high concentration of the foul gases, a vigorous reaction takes place and the chlorine and mercaptans react with each other and result in the formation of thick white fumes and in an increase in the temperature of the wood. An excess of chlorine cannot have any bad effects, as it is entirely absorbed by the lignin of the wood or straw or other woody material.

Description of the Apparatus Used in the Experiment

The test apparatus used in making the practical experiment consisted of a horizontal or obliquely placed cylinder, which was filled with the contact material. Fans were located on both ends of the cylinder. One fan forces the gases into the cylinder, while the other fan, at the opposite end, sucked them out again, discharging them through a vent pipe into the atmosphere. The testing installation was built to treat about 16,000 cubic meters of the waste gas in 24 hours. The cylinder requires about 150 kilograms of wood or 50 kilograms of straw to fill it. In the experiments which were made with wood, the gases, smelling strongly of mercaptans, were driven through the cylinder, filled with wood. Before the gases entered the cylinder, their temperature was 150 degrees C. After the cylinder had warmed up, clouds of white vapors were evolved from the vent pipe. The odor of these vapors was that of freshly treated wood, and not disagreeable in any way. When straw was used in the place of wood within the cylinder, then these white vapors possessed the characteristic odor of stored straw.

Water Condensate Produced as Well

After the apparatus had been in operation for some length of time, drops of condensed water trickled down from the end of the vent pipe. This condensate water was entirely odorless, and, furthermore, it did not contain any free acid, even when chlorine was added to the waste gases before the treatment. Neither was the condensate contaminated with particles of flue dust, while, as was seen from an examination of the wood in the cylinder after a day's operation, the black flue dust had covered the wood in certain parts with a slightly baked-on coating, which, however, could be easily washed off. If the flue dust can be successfully recovered and utilized again in the manufacture, then it is possible to reduce the loss in sodium salts, which amounts to at least 10-15 per cent to a maximum of 25 per cent, to a minimum of 2 to 5 per cent (through the recovery of the residual alkali, which remains in the causticization mud and in the cellulose). The recovery of the flue dust is aided very considerably by the perufication of the waste gases by causing them to come in contact with wood.

Further Treatment of the Flue Dust

If the wood, which is completely covered with the flue rust, is washed with water, then the soluble constituents of the flue dust, and, similarly, by far the greatest part of the insoluble constituents, such as particles of carbon and of silica, can be washed off. Now, if the wash waters that are obtained in this manner are used in the causticization plant, then the dissolved materials, such as, for example, sulphide of soda, sulphate of soda, sulphite of soda and perhaps carbonate of soda as well, can be used again in the manufacturing process. The fine particles of carbon and the silica dust—which cannot give rise to any technical difficulties in the manufacturing process in their crystalline condition—remain mixed with the lime mud, where they can exert no deleterious influence. In fact, they might serve a useful purpose in loosening up the lime mud cake and render it more useful for fertilizing purposes.

Reuse of the Contact Wood Used in the Cylinders

It must be assumed that the wood, which is freed of its flue dust contamination by the lixiviation process—in any case after preliminary drying—can be used again for contact purposes in the purification cylinders. However, finally, the wood becomes so dirty that it can no longer be sufficiently cleansed to be used in the purification process; this wood can then be used as a fuel. It must also be remembered that the treatment with chlorine gas results in a partial chlorination of the lignin of the wood. The chlorinated product can then be made to dissolve in part by subsequent treatment with sulphite of soda. In this manner fresh surfaces of the wood are exposed, so that new contact surfaces are rendered available for the purification of the waste gases.

The constant regeneration of the wood, or rather of the contact surface of the wood, which has just been briefly explained, was tried out experimentally in the course of the operation of the experimental purification installation. If waste wood was used for filling the contact apparatus—there is no good reason for using first-grade wood, suitable for digestion and conversion into wood pulp, for this purpose—then the consumption of wood in the purification process is of no consequence. In paper mills that use straw in the manufacturing process, the knots and parts of the stalks, which form the waste products, can be used for this purpose. If it is not desired to manufacture a cellulose of second quality, in which the impurities are derived from the particles of carbon which are mixed with the "contact wood" or "contact straw," then, due to the fact that the flue dust cannot be removed from the wood, both the "contact wood" and the "contact straw" cannot be used in the cellulose digester.

As far as the digester gases are concerned, which are discharged through the vent pipe of the apparatus, the good quality wood or straw in the digester bins may be used for purification purposes, as in this case there is no danger of the wood or straw becoming contaminated and soiled with particles of carbon.

Larger Scale Apparatus

The apparatus that is used in large scale operations is accordingly divided into two parts. As has been mentionad above, wood and straw from the storage bins of the pulp digester may be used for the purification of the digester gases. The vapors of steam that are evolved from the storage bins can be condensed in a surface condenser. The condensate that is produced in this manner can be utilized for leaching out the wood or straw that is used as the contact material in the purification of the furnace gases. These gases are made to pass through a second apparatus, consisting of a cylinder filled with waste wood or waste straw (knots) from the manufacturing processes in the factory. The water vapor that is evolved from this purification apparatus may be similarly condensed in a surface condenser to give a warm condensate. This condensate can then be used to wash the wood, used in the purification cylinder, so as to free it from its coating of carbon. Consequently, not only are the evil odors removed, but also the heat content of the digester gases and of the furnace gases is recovered and utilized in the manufacturing process. Similarly, the flue dust is recovered and reused.

The removal of the odors from the waste gases affords the possibility of increasing the quantity of sulphide of soda used in the digester process to as high a proportion as may be desirable. In this way a cellulose of better quality can be manufactured than has been possible heretofore. As the bad odors produced during the course of the manufacturing process have been an influential factor in hindering the development of the sulphate cellulose process and the increase in the number of operating plants, it is to be hoped that this new invention will serve a useful purpose in removing the causes of this stunted progress and allow future development in sulphate cellulose manufacture to take place unimpeded.

The second edition of the general catalog of the Noble & Wood Machine Company, Hoosick Falls, N. Y., has recently come off the press. The new volume is elaborately arranged and embraces all types of machinery for the paper mill. Printed on an attractive grade of coated book paper, the catalog contains approximately 225 pages of text matter. Halftones and line cuts illustrating the cloth-bound volume are exceptionally clear, making the work in its entirety of especial value to those interested in papermaking machinery.

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A NEW PROCESS FOR DETERMINING THE DEGREE OF FINENESS OF BEATEN STUFF*

By E. W. L. Skark

The author mentioned that he was in the course of developing a new instrument for testing the degree of fineness of beaten paper stuff in an article that appeared in *Der Papierfabrikant* in number 23 of the year 1921. This is a detailed account of this instrument and the method of using it.

Comparison with Apparatus in General Use

While the flow of water from the mixture of paper stuff and water is effected from the top downward through a screen in all the forms of apparatus, which have been used up to the present time for the purpose of ascertaining the degree of beating, such as the Klemm sedimentation tester, the Skark tester for the uniformity of the paper stuff, the Schopper-Riegler tester for the degree of beating and the Poller-Ferda apparatus, and while only in the case of the Schubert tester for the degree of grinding and in similar devices the water is sucked through a screen from the bottom upwards by means of a special arrangement, this is accomplished in the new testing process in the same direction. That is the water is removed through the screen from the bottom upwards, but no suction device need be provided.

The Principle of the New Process

The principle of the new process consists in the fact that a hollow vessel provided with a perforated bottom, is introduced into a mixture of water and paper stuff. Then, due to the fact that a certain amount of water is displaced, the apparatus sinks to a certain level. The water is forced into the interior of the hollow vessel due to the difference in level. The rapidity with which this takes places is dependent on the following six factors:

1. Difference in level.
2. Surface area of the screen or perforated bottom.
3. The mesh of the screen.
4. Degree of beating of the paper stuff.
5. Concentration of the stuff.
6. Thickness of the cake of paper stuff on the screen.

The last three factors may be combined into one factor, the density of the cake on the screen, and consequently the number of factors may be reduced from six to four. Of these four factors the difference in level, the surface area of the screen and fineness or mesh are kept constant, so that only the degree of concentration of the stuff and the fineness, to which it is beaten, have any influence on the result.

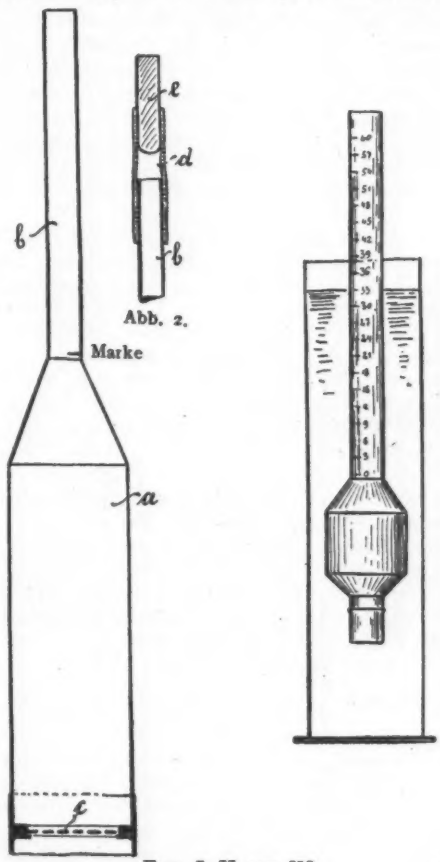
Description of the Apparatus Used In the Testing

The apparatus used is shown in diagrammatic form in Figure 1. It consists of a cylindrical metallic vessel, which is contracted at the top to form a tube, and whose lower end is so made that it can carry the screen disc. After each test the screen disc must be thoroughly washed off. If the apparatus is inserted into a mixture of paper stuff and water, placed in a tall jar, then a difference in level occurs between the position of the water at the screen and that of the rest of the water surface whereby the water is forced to rise within the interior of the apparatus.

At the moment of insertion of the apparatus into the mixture, the water pressure is greatest and constantly decreases from this point on. Nevertheless, the fact that the difference in pressure, when a proper choice is made of the surface separating the water and the hollow part of the apparatus, is able to exert a hardly noticeable influence, but nevertheless one that falls within the limits of experimental error, on the quantity of water which infiltrates to the interior of the vessel, is shown by the following experiments.

Testing the Sensitivity of the Apparatus

The upper end of the testing apparatus was closed by means of a rubber tube and a short glass rod, as may be seen from Figure 2. The apparatus was then placed into a glass cylinder, filled with



Figs. I, II and III

a mixture of water and paper stuff. It was submerged to different depths and its depth determined after 5, 10, 15, 20, 40, 60 and 100 seconds.

The apparatus, which was closed at the upper end, was dipped once to a depth of 21.5 centimeters, and another time to a depth of 37 centimeters, in the mixture of paper stuff and water. These depths were measured from the upper level of the water. The upper end was then opened to the air for a given number of seconds, then it was closed again and the depth of the instrument determined in the closed condition, that is the difference between the water level of the water in the tall testing jar and that at the screen disc in centimeters water pressure.

(A detailed table of results is given in the original article.)

Discussion of the Results

From the individual values that were obtained and that were

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* Der Papierfabrikant, 1922, 845,852. Translated and abstracted by Ismar Ginsberg, B.Sc., Chem. Eng.

given in the table it is clearly evident that the difference in water pressure, both in the case of slightly beaten paper stuff and also in the case of paper stuff that is beaten up very finely (so far as this difference varies between certain limits), has an effect on the depth to which the instrument sinks in the paper stuff and water mixture; this is almost nil. Consequently in this process the water pressure (centimeters of water difference in level between the screen and the surface of the water in the testing jar), can be neglected entirely.

Taking into consideration the measurability of these differences, the surface area of the screen was fixed at 3.14 square centimeters, that is, the screen has a diameter of 2 centimeters.

Effect of the Fineness of the Mesh in the Screen

It was pointed out in the special issue of the *Papierfabrikant* of 1910 that the fineness of the mesh of the screen at a fixed degree of concentration of paper stuff has almost no effect on the quantity of the discharge. Nevertheless in the case of a very fine screen the inconvenient property of such a screen is clearly manifested, in that the surface of the fine screen does not become uniformly wet. In this way the surface of the screen is partly spoiled as far as its functioning in the test is concerned. As a result thereof there are naturally rather great differences in the determinations.

Such fine screens, after being sprayed with water, must be well pressed between two pieces of blotting paper, before they can be used again in the testing. The fact, that such errors can very easily enter into the determination, can be deduced from actual observation of the operation of washing drums in hollanders, which often become so choked up with paper stuff stuck in the meshes of the screen that they will not suck up the liquid until they have been struck a number of times to loosen up these deposits of paper stuff. When the testing apparatus is provided with a No. 65 mesh screen and when the screen disc is cleaned, as has been mentioned above, and then dipped into pure water, it sinks at once. But if the screen has not been thoroughly cleaned then the time it takes to sink is increased three to five-fold. The difficulty of cleaning such screens led the inventor to supplant them with coarser screens of No. 50 or 45 mesh. These will give absolutely accurate results. Even the finest stuff, for example pure cellulose, such as is obtained after four to six hour beating in basalt lava hollanders, give results, which agree with each other very well. A concentration of 0.13 per cent was used.

Infiltration of Water and Fineness of Beaten Stuff

As the fineness of the paper stuff increases, the speed with which the water in depositing the stuff on the screen, penetrates into the interior of the apparatus, decreases. Either the cubic centimeters of water, which pass through the screen in a certain length of time, or else the time, which it takes a certain amount of water to pass through the screen, may be taken as the standard by which the degree of beating that the paper stuff has received, is determined.

The required concentration of the paper stuff in the water mixture is established experimentally. A sample of the mixture, about 85 cubic centimeters, is diluted to 500 cubic centimeters with water, and then tested with the apparatus. It is shown that such a high concentration of paper stuff, while the apparatus sinks in the glass cylinder, causes a cushion-like concentration of the paper stuff in the testing jar. This prevents the uniform sinking of the testing apparatus. The paper stuff must be diluted to about 2,000 cubic centimeters before the testing can proceed.

A sample of stuff mixture is taken during the course of the operation of the hollander, and six parts of this sample, each 85 cubic centimeters in volume are used for the determination of the dry stuff content, while one part is employed for testing with the apparatus.

In all the experiments that follows the time is expressed in seconds, that is the time within which the spindle sinks to the mark.

The cylinder which was used in the testing had an interior diameter of 5.3 centimeters and a height of 48 centimeters.

As may be seen from Figure 2, the screen holder of the apparatus has a chamber under the screen, which is open at the bottom, so as to afford the quite uniform deposition of the cake of paper stuff, which is obtained in the proper degree of thickness corresponding to the concentration of the paper stuff.

Method of Working with the Instrument

In order to determine the quantity of air in cubic centimeters that is displaced when the apparatus sinks to the mark, the depth of immersion of the tester in pure water is first determined. For this purpose the screen disc is replaced by a thin metallic plate of approximately the same weight, and after the apparatus was inserted in the pure water, cold water was permitted to flow into the upper part of the apparatus from a burette, until the instrument had sunk to the mark. The number of cubic centimeters of water, used for this purpose, is equal to the air displaced or to the quantity of water, that passed through the sieve during the normal operation of the apparatus, when it sunk to the same mark. In the testing apparatus that was used in this investigation the quantity of water which was added in order to cause the instrument to sink to the mark was 60 cubic centimeters.

Results of the Experiments

In the first experiment unbleached sulphite cellulose, beaten for half an hour, containing a density of paper stuff amounting to 4.8 per cent, was used.

Six separate tests of the determination of the dry paper stuff in the mixture showed this content to be approximately 8.2 grams in an 85 cubic centimeter sample. The testing in the apparatus was then carried out with a concentration of paper stuff amounting to 8.2 grams in 2,000 cubic centimeters. The apparatus sunk to the mark in 22 5/23 seconds, an average of 5 tests. After each test the screen was washed and the stuff in the glass cylinder was uniformly distributed in the water by shaking.

Then the concentration of the paper stuff was reduced to 8.2 grams in 4,000 cubic centimeters of water, and the test repeated. Now it took an average of 15 seconds for the instrument to sink to the mark. The dilution was continued further, until the value of water added amounted to 8,000 cubic centimeters. Ten separate determinations were made. In the second five of these the apparatus was not cleaned after each determination. The low results that were obtained in this series of tests may be explained by the fact, that when the apparatus was taken out of the testing cylinder, without removing the screen part, a few tenths of a cubic centimeter of water remained within the interior of the apparatus. If the last five tests, which ran as low as 10 seconds, compared with a high figure of 11 seconds, are excluded, then an average of five tests gave the time 10.5 seconds.

Other Tests Made with the Apparatus

In all, eighteen series of tests were made with this apparatus, all in the same manner as has been described above. Four more tests were made with unbleached sulphite cellulose, increasing the time of beating to one hour 45 minutes, 2.5 hours, 3.5 hours and finally 4.5 hours. These corresponded to the second, third, fourth and fifth series of tests. The sixth to tenth series of tests were made with bleached sulphite cellulose, with a stuff density of 4.6 per cent, and with different degrees of beating varying from one hour to five hours, by stages of one hour in each successive test. The eleventh, twelfth, thirteenth and fourteenth series of tests were carried out with unbleached sulphite cellulose with different degree of beating starting with one hour and increasing an hour in each successive test up to a maximum of four hours.

The fifteenth test was carried out with a hard linen stuff with

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a concentration of 5 per cent. This stuff received a 22 hour beating. An average of three analyses showed that average weight of the dry material was 5 grams. In this test the apparatus sunk to the mark within 919 seconds. The mixture of stuff and water was then heated to a temperature of 50 degrees C, and then the apparatus sunk to the mark within 115 seconds. When the mixture of water and paper stuff was heated to 45 degrees C, the apparatus sunk to the mark within 135 seconds. The entire mixture of water and paper stuff was then well mixed with 50 grams of the finest grade of precipitated carbonate of lime (as a filler). Under these conditions it took the apparatus 74 seconds to sink to the mark. This test was repeated with a result of 730 seconds.

The sixteenth test was carried out with hard linen stuff, which had been subjected to a 22-hour beating. The concentration of stuff was 4.9 per cent. In the seventeenth test the same stuff was used, but after it had been subjected to an 11-hour beating.

The eighteenth test was carried out with wood pulp in the form of sheets. These sheets were softened up, then well kneaded with water and 85 cubic centimeters of this mixture were diluted to 4,000 cubic centimeters.

Discussion of the Above Results

In all the eighteen tests which have been described shortly above the greatest care was taken to see that the concentration of the stuff was determined with the utmost accuracy. In the first place, it was found that the rapidity of the sinking of the apparatus did not always vary in the same proportion with the concentration. The best proof of this conclusion was afforded by the first series of tests, in which it was found that when the dilution of the paper stuff was increased fourfold, the rapidity of the sinking of the instrument was scarcely increased twofold.

The rapidity of sinking of the instrument to the mark is also effected by the concentration of the paper stuff. This was proved to be true in all the experiments made.

Effect of Fillers

The fifteenth test was made with the addition of fillers. These have the effect of causing the fibers to settle to the bottom of the vessel at a comparatively greater speed than when unfilled fibers are used. Unfilled fibers remained suspended in the water mixture for a greater length of time. In order to be able to test accurately such paper stuffs, that is, when mixed with fillers, the amount of filler present must be determined. Then the quantity of material used in the test must be increased by a corresponding percentage. For example, if a mixture of paper stuff and water is being tested, which contains likewise 20 per cent kaolin as a filler, then the normal concentration of 5 grams in 4,000 cubic centimeters of water must be increased to 5 grams plus 20 per cent, or 6 grams in all.

Effect of the Temperature

The temperature at which the test is carried out must be maintained at a constant and standard point. Variation in temperature affects the results, as was shown by actual experiment. Consequently, all the tests were carried out and all the results were obtained at a temperature between 10 and 15 degrees C. The effect of the variation in the temperature was shown in the fifteenth test, described above.

The Thickness of the Cake of Stuff on the Screen

The thickness of the cake of stuff, which is dependent on the concentration of the stuff and the degree of the beating, as only an amount of stuff, corresponding thereto, in dehydrated on the screen, does not have to be taken into consideration when the concentration of stuff remains constant.

Comparison of Results of Tests

The following table gives a resume of the more important results obtained in the above experiments, and shows how it is possible to determine differences in the degree of beating with various kinds of paper stuff, all the results being calculated on a basis of 5 grams of stuff in 4,000 cubic centimeters.

Test No.	Concentration. Per cent	Seconds. Rapidity of sinking	Remarks. Time of beating
1.	0.1025	10.5	30 min.
2.	0.1275	91.0	1.75 hrs.
3.	0.1250	362.0	2.50 hrs.
4.	0.1325	856.0	3.50 hrs.
5.	0.1500	1,332.0	4.50 hrs.
7.	0.1312	97.0	2 hrs.
8.	0.10625	346	3 hrs.
9.	0.1225	745	4 hrs.
10.	0.13125	1,300	5 hrs.
11.	0.175	35	1 hr.
12.	0.1575	219	2 hrs.
13.	0.1125	720	3 hrs.
14.	0.175	1,560	4 hrs.
15.	0.125	919	22 hrs.
16.	0.125	955	22 hrs.
17.	0.125	880	11 hrs.

Practical Application of the Test

It is evident that for practical work it would be unsatisfactory to use a method in testing the degree of fineness in very finely beaten stuff, which would require observation for so long a time as indicated above. Consequently, the author has devised a plan for the testing of such materials by determining what is known as "degrees of stuff." By a "stuff degree" is known as the cubic centimeters of water at a temperature of 10 to 15 degrees C., which would rise from the bottom upwards from a 0.125 per cent (5 grams in 4,000 cubic centimeters) of a pure mixture of water and paper stuff through a circular screen, which has a surface area of 3.14 square centimeters, within a minute of time under the characteristic starting pressure in the apparatus required for this purpose. This instrument is known as the stuff spindle and is shown in figure 3. The instrument is made by the Poller firm in Leipzig.

When the results given above are converted into degrees of stuff, the following values are obtained for the series of experiments 1 to 5:

Seconds speed of apparatus in sinking to the mark	Degrees of Stuff
10.5	342
91.0	39.5
362.0	10.0
856.0	4.2
1,332.0	2.7

When the apparatus sinks to the mark, then 60 cubic centimeters of water has passed through the screen. According to the speed, with which it is desired to work, it is possible to use spindle apparatus, which are provided with a partial or full scale. A range of 50 cubic centimeters in the scale is sufficient for testing silk and cigarette papers, as well as for compact fine papers.

For the determination of half stuffs, such as mechanical wood pulp and different kinds of cellulose, scales of greater range, corresponding to the character of the stuff used, must be chosen.

Conclusions

The new instrument for the determination of the degree of beating of paper stuff is known as the "stuff spindle."

The experimental results, obtained with this apparatus, are known as "degrees of stuff." They represent the cubic centimeters of water, which will rise in a minute's time through a circular screen, having a surface area of 3.14 square centimeters, from a mixture of water and stuff, containing 0.125 per cent of the latter. The temperature of the mixture of stuff and water as well as the content of stuff in the mixture must be accurately controlled.

The samples of stuff can be taken directly from the hollander by means of a scoop without introducing any appreciable error in the testing. The sample is then mixed with water in a wooden measuring vessel and the mixture is stirred very thoroughly with an agitator.

The testing apparatus consists of the stuff spindle, a suitably sized glass cylinder, an hour glass and a tin sample taker.

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NEWS PRINT SERVICE BUREAU MEETS AT HOTEL COMMODORE

Col. Wm. E. Haskell, Vice-President of the International Paper Co., Presides in the Absence of President Babcock —Secretary Kellogg Makes Report Showing Enormous Increase in Production of News Print in Past Ten Months —Philip T. Dodge, President of the International Paper Co., Just Back From Extended European Trip, Makes Interesting Address Regarding Conditions Abroad.

Held in the west ball room of the Commodore Hotel, New York, the meeting of the News Print Service Bureau was called to order last Thursday morning at 10:00 o'clock. In the absence of C. A. Babcock, of the Wisconsin River Paper and Pulp Company, president of the Bureau, Colonel W. E. Haskell, vice-president of the International Paper Company, officiated. R. S. Kellogg, secretary of the Bureau, followed Colonel Haskell's introductory remarks with a statistical report on news print production and consumption which was in part as follows:

News Print Production Greater

Production of news print paper in the United States and Canada during the first ten months of 1922 was 25 per cent greater than during the same period in 1921, shipments from the mills increased 26 per cent during the same time and stocks on hand at the mills on October 31, 1922, were 7 per cent less than a year earlier and amounted to only 3½ days' maximum production.

According to present indications the total production of news print paper in 1922 will go somewhat beyond 2,500,000 tons or about 120,000 tons more than during the previous record-breaking year of 1920.

Imports of news print paper from Europe total 257,000 tons since September 1, 1920, the month during which the first German paper arrived. Of this total 80,000 tons have come from Germany, 94,000 from Sweden, 44,000 from Finland, 32,000 from Norway and 7,000 tons from other European sources. The average for the entire 25 months has thus been 10,000 tons per month, but the volume has been by no means steady. During the seven months from August, 1921, to February, 1922, the average was 14,500 tons per month, while from March to September of this year inclusive the average has been only 7,500 tons per month.

As indicated by the figures upon mill production and shipments, consumption of news print paper in 1922 has been very heavy. As a matter of fact, for the first nine months of this year, which is as far as we have complete data, the consumption of standard news print paper was 16 per cent more than during the same period in 1921 and 12 per cent more than during the first nine months of the record-breaking year of 1920.

The increased consumption has been due partly to increased advertising volume over 1921 and partly to the printing of larger papers with increased circulation. There are between 60 and 70 newspapers in the United States, each having a circulation in excess of 100,000 copies. During the first ten months of 1920 these dailies averaged 23 pages each, during the same period of 1921, 22 pages and during the first ten months of 1922 the average was 25 pages. During the same periods the Sunday issues of these papers averaged 78, 79 and 88 pages.

The volume of newspaper advertising in the leading cities up to October 31 totals about 8 per cent more this year than last and about 6 per cent less than during the same period of 1920. If the present rate is maintained the volume during November and December this year will exceed the 1920 totals.

Periodical advertising which fell off 38 per cent in 1921 from the great record of 1920 so far shows a gain of only 2 per cent in 1922 over 1921.

According to the compilation of the Curtis Publishing Company, advertising in seventy-two weekly and monthly magazines in 1921 exceeded $95,000,000 in value of space, while the estimates of the Bureau of Advertising of the A. N. P. A. are that the total value of newspaper advertising in 1921 was $650,000,000 of which $180,000,000 was national advertising and $470,000,000 local advertising. Indications are for a very large volume of newspaper advertising next year.

The new machines under construction which are expected to come into operation during the next seven months will bring the capacity of the regular news print mills in the United States up to 5,110 tons daily and in Canada to 4,160 tons, making a total of 9,270 tons. It would seem, therefore, that the newspaper publishers should be able to get all the paper they will need in 1923 from North American mills without going overseas for their supply.

Talks by Messrs. Weaver and Clark

After the treasurer's statement, talk on Cost Keeping and Operating Efficiencies was given by H. R. Weaver. This was succeeded by the announcement that in response to a request by the Customs Division of the Treasury Department as to "What Constitutes Standard News Print Paper?", a report had been forwarded by the Bureau, defining standard news print.

F. C. Clark, vice-president and general manager of the Pejepscot Paper Company, then delivered an address on the "Suggested Uniform Basis for all Papers," following which the attention of the assemblage turned to the election of new members. The following three companies were elected: Great Western Paper Company, Ladysmith, Wis.; Tidewater Paper Mills, Brooklyn, N. Y., and the Consolidated Water Power and Paper Company, Wisconsin Rapids, Wis. These three additions bring the total enrollment of the Bureau to 34 members.

An Enjoyable Luncheon

About fifty members and invited guests attended an enjoyable luncheon which was served in the West Ball Room of the Commodore directly following the meeting in the morning. The principal speaker was Philip T. Dodge, president of the International Paper Company who had just returned from an extended trip of the paper making countries of Europe. Mr. Dodge gave a most interesting and enlightening talk. He said conditions were not good across the water and that it would require better statesmanship than had been displayed since the war to bring matters back to normal. Speaking more specifically about paper he said the mills abroad were about on an average with our own and that except for cheaper labor and less expensive raw materials it was not necessary greatly to fear competition from them.

George W. Sisson, Jr., president of the Racquette River Paper Company, of Potsdam, N. Y., and former president of the American Paper and Pulp Association who with Dr. Hugh P. Baker, secretary of that association, also had just returned from Europe complimented Mr. Dodge on his statesmanlike address and from his own observations reinforced many of the thoughts expressed by Mr. Dodge.

Louis Schable, manager of the Export Department of the International Paper Company who had just returned from a lengthy trip to Australia, Java and other Oriental countries told about conditions in these lands stating that they would become increasing consumers of American paper.

The concluding speaker was Henry A. Wise, who was instrumental in forming the News Print Service Bureau. He spoke about the political unrest at home.

The toastmaster Col. Wm. E. Haskell expressed gratification at the good attendance and the flourishing conditions generally of the organization.

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MICHIGAN SUPERINTENDENTS HOLD MEETING AT KALAMAZOO

J. H. McMahon Discusses Mathieson Method of Preparing Bleaching Liquors at Gathering of the Michigan Division of the American Pulp and Paper Mill Superintendents Association—James F. Dougherty Traffic Manager of the Michigan Paper Mills Traffic Association Makes Statement Regarding Waste Paper Rates From Eastern Points to Kalamazoo.

[FROM OUR REGULAR CORRESPONDENT]

KALAMAZOO, Mich., November 20, 1922.—J. H. McMahon, representing the Mathieson Alkali Works, Inc., was the speaker at the Thursday evening gathering of the Michigan division of the American Pulp and Paper Mill Superintendents' Association. His subject matter was a discussion of the Mathieson method of preparing bleached liquors for liquid chlorine. His talk was illustrated with a series of lantern slides, photographs, charts, etc.

Practically all the mills in the Kalamazoo valley use chlorine for bleaching, making the subject one of especial interest to all present. The meeting was thrown open for general discussion and Mr. McMahon answered numerous questions at the end of his talk.

The superintendents, about 20 in number, occupied the Park-American breakfast room. President N. M. Brisbois, of the Sutherland Paper Company, presided.

Waste Paper Rates

Clarence A. Bradford, secretary of the Michigan Paper Mills Traffic Association, has received from James F. Dougherty, traffic manager of that organization, a statement regarding the waste paper rate cases from Eastern points to mills in the Kalamazoo valley district as recently fought out before the Interstate Commerce Commission.

Mr. Dougherty refers to what he terms "unsupported rumors" emanating from various sources, saying: "Some of these reports were that reductions would be made October 1, 1922, others named November 1, 1922, as the date and some reports brought to our attention specified tariff supplement number and date, supplement 21 to Agent Curlett's ICC, No. A-59 of October 17, 1922."

Continuing, Mr. Dougherty's report says: "After many months of correspondence and conferences with the freight traffic managers, and, in some instances, higher officials, we were able with the generous support given in the matter of routing of your inbound material by most of the executives permitting us to promise a given amount of freight to each line in return for their support, to reach an agreement whereby we were to secure reductions in rates on scrap paper and rags.

"The result was that on April 20, 1922, reductions of 3 cents to 5 cents cwt. were obtained from Eastern Trunk Line territory.

"It was on May 15, 1922, that the reductions were made from the New England territory, they also ranging from 3 cents to 5 cents cwt.

"When the 10 per cent reduction of July 1, 1922, was made on classes and commodities, generally, the Eastern Trunk Line carriers felt that inasmuch as the reduced 6th class rate of July 1, was as low, in some instances, or lower, in other instances, than the commodity rates established April 20, 1922, they would be justified in cancelling the commodity rates and not give them the 10 per cent reduction. This led to a storm of protest and we again were active in your behalf.

"The New England lines did not cancel the commodity rates on July 1, 1922, but did give them the 10 per cent reduction. This action met with protest by the Eastern Trunk Lines who brought pressure to bear and the New England lines, on October 17, 1922, in supplement No. 21, to Curlett's tariff ICC No. A-59 did cancel their commodity rates. Pressure continuing on the Eastern Trunk Lines has brought about in publication of supplement No. 13 to Curlett's ICC No. A-80 effective December 10, 1922, of the commodity rates that were in effect from April 20, 1922, to July 1, 1922, less the 10 per cent reduction and readjustments.

"These readjustments make changes of from 1 cent under to ½ cent over what a flat 10 per cent reduction on the old rates would have made.

"Pressure is being applied to the New England Lines in an endeavor to force the restoration of commodity rates cancelled on October 17, 1922."

Rates effective December 10, 1922, on scrap paper and rags are as follows:

From	To Kalamazoo, 3 Rivers, Vicksburg, Otsego, Plainwell, White Pigeon	To Elkhart, Watervliet
Albany	.31½	.32½
Baltimore	.36½	.37½
Cumberland	.30½	.31
New Berlin	.37½	.38½
New York	.39½	.40½
Ogdensburg	.36½	.37½
Philadelphia	.37½	.38½
Scranton	.31½	.32½
Syracuse	.27½	.28
Williamsport	.30½	.31

Minimum weight 24,000 pounds in 36 ft. 6 in. car.

A. E. Troetscher Resigns from Central Paper Co.

Alfred E. Troetscher, for the past 23 years superintendent of the pulp department of the Central Paper Company, Muskegon, has resigned to take a much needed rest. While his plans are not definitely stated, it is reported on authority believed to be excellent that he will take an extended trip abroad, visiting many of the sulphate pulp mills in Europe. As a token of their good will a deputation of officers and employees of the Central Paper Company presented Mr. Troetscher with a gold watch and chain.

During his term of service with the Central Paper Company, Mr. Troetscher has gained a national reputation for the excellence of production obtained. Especially is that true in the sulphate pulp mill, which was the first successful mill built in the United States fourteen years ago. Due to Mr. Troetscher's efforts and knowledge, it is one of the most modern and efficient mills in operation and is also known as the odorless sulphate mill.

K. V. P. Starts Paper Makers' School

The Kalamazoo Vegetable Parchment Company has started a papermakers' school, which meets evenings in the company's handsome community house. The class is under the direction of Ernest Stolls and the original enrollment exceeded 30 in number and is steadily growing. The text books to be used are those prepared by the Vocational Educational Committee of the Paper Industry. Class sessions will be informal, the object being to advance as rapidly as possible in the studies, thus enabling members to cover the maximum of ground in the limit of time.

Constant Southworth Resigns From Paper Division

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., November 22, 1922.—Constant Southworth, Assistant Chief of the Paper Division of the Bureau of Foreign and Domestic Commerce, has resigned his position effective January 1 to become associated with the Institute of Economics which is under the Carnegie Foundation. Mr. Southworth will take up his new work in connection with international finance. Mr. Southworth at one time was in charge of paper work of the United States Tariff Commission and was in charge of the pamphlets on paper which were compiled by the Commission for the Ways and Means Committee of the House when the tariff bill was under discussion. He left the Tariff Commission in July, 1921, and went with the Bureau of Foreign and Domestic Commerce. He was transferred to the Paper Division when the Division was organized.

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EXTEND TIME OF PAYMENT ONE YEAR FOR RIORDON CO.

R. M. Davey, Chairman of Committee, Said Only Prospect Creditors Have of Receiving Any Dividend on Their Claims Worth While Is by Operating the Company's Plants to Their Fullest Capacity—Considerable Quantities of Canadian Pulpwood Destined for Export to the United States Is Held Up Owing to Ruling of the Customs Authorities That the Wood Is Subject to Duty.

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., November 20, 1922.—The unsecured creditors of the Riordon Company extended the time of payment for the Company to November 17, 1923, at a meeting attended by nearly 90 per cent of unsecured creditors, either in person or by proxy in Montreal during the week. The motion was passed unanimously, and provides that the creditors' committee may at its discretion and on thirty days' notice to the company declare any debt due at any time within that period. Called on to give his opinion of conditions in the pulp and paper industry, Lieut.-Col. Renouf said that the outlook was a good deal more favorable than a year ago. The output of high grade paper has risen from 25 per cent of mill capacity of the company during a year and a half to 80 or 90 per cent of capacity. Demands from magazine advertising and for wood-bond papers for office use showed an increase and were now nearly normal. Prices had improved gradually and were becoming steadier as they approached normal. R. M. Davey, chairman of the committee, said: "The only prospect the creditors have of receiving any dividend on their claims worth while, is by operating the company's plants to their fullest capacity, in the hope that by so doing their equity will be kept together and improved. It is apparent also that a reorganization in which the creditors' claims can be substantially recognized will be possible only if the company remains a going concern. Personally, I am of the opinion that the business of the company should be held together as a unit until the financial houses interested are able to submit a plan of reorganization in the hope that in that plan arrangements will be made for an allowance to the creditors of cash or securities to as large an extent as possible in proportion to their claims. Reorganization seems essential because of the tremendous burden, resulting from the fixed charges which, under the present conditions, absorb all profits made by manufacturing." It was mentioned that the Ticonderoga Company of which the Riordon Company owns 60 per cent of the capital stock, has been operating steadily at low cost and very satisfactory production with the net result that there is a very satisfactory estimated profit for the ten months of 1922, after all charges, of $172,356.

U. S. Customs and Canadian Pulpwood

Considerable quantities of Canadian pulpwood destined for export to the United States have been held up at the border owing to the ruling of the Customs' authorities that the wood was subject to duty. In the new tariff there is a clause providing for the free entry of "pulpwoods." Another clause, however, reads: "Logs of fir, spruce, cedar or western hemlock, $1 per thousand feet board measure." The intention of the latter clause was to make woods to be used for construction purposes pay a duty in competition with United States woods. On the other hand the clause admitting "pulpwoods" free was inserted for the benefit of mills making pulp and paper which are dependent for a large part of the pulpwood they require on Canadian sources.

In a summary of tariff information prepared by the United States Tariff Commission for the use of the Finance Committee when the question was up for discussion, it was stated that aside from general construction work spruce was by far the most important of the pulp-wood, and that hemlock was also an important one. Spruce formed fifty-four per cent of the total amount of domestic consumption of wood pulp. Figures show that the total cut of spruce in the United States in 1918 was 980,561,000 board feet, of which 491,564,000 or 50.1 per cent came from Washington and Oregon. The total cut of western hemlock was 348,117,000 of which 343,852,000 or 98.8 per cent came from Washington and Oregon. Imports of these logs are not segregated from other logs, but, it is added, their distribution in Canada is somewhat similar to that of the United States. The argument of the mills has gone to Washington and a decision is awaited with keen interest.

Timber Permits to be Auctioned

Permits for the cutting of timber in Quebec Province will be put up at auction at the legislative buildings in Quebec, December 12, according to notice contained in the last issue of the Quebec Official Gazette. The following concessions are offered for the cutting of green and other trees: Abitibi region Township of Louvicourt East, 31 square miles; Township of Piedmont, 14½ miles; St. Maurice region, Township of Montpetit, 25 square miles; Lake St. John district, Chamouchoaune river, 3 square miles; Saguenay region, township of Laval, 8 square miles; Township of Callieres, 10 square miles; Riviere Bergeronnes, 11 square miles; Bonaventure region, Township of Carleton, 10⅓ square miles; Township of Nouvelle, 4½ square miles; Township of Mann, 4¾ square miles. The Department of Lands and Forests also offers for sale permits for the exclusive cutting of timber killed by fire or by insects in the Abitibi region as follows: Township of Varsan, 10 square miles; Malartic, 2½ square miles; Piedmont, 24½ square miles. The usual conditions are to be fulfilled.

Car Shortage Acute

Canadian business is literally starving for want of adequate supplies of freight cars. On November 1, there were no less than 24,000 freight cars belonging to Canadian railroads running at large in the United States. The normal level is 12,000. The situation so far as Canada is concerned is most acute. The heavy grain movement in the West has served to call from other parts of the Dominion all available rolling stock. This fact, together with the large number of cars now in the United States, is imposing a heavy tax upon business and great difficulty is experienced in getting cars for pulp, paper, and lumber. It is difficult for the Canadian railroads to get back cars from the United States under normal conditions. At the present time with railway traffic to the south markedly heavy, and with northward shipments unusually small, the condition is being accentuated. Meanwhile, many pulp and paper companies are giving increasing attention to shipment by water. Mills on the St. Lawrence have been shipping largely by water to New York, Philadelphia and Boston. Now it is announced that the Spanish River Pulp and Paper Mills are delivering news print at Chicago by the water route, a party recently witnessing the unloading of a shipment of 1,250 tons of news print paper.

Specifications Committee Meets

[FROM OUR REGULAR CORRESPONDENT.]

WASHINGTON, D. C., November 22, 1922.—The Specifications Committee of the Joint Committee on Printing met yesterday to organize. In accordance with a resolution which was passed by the Joint Committee on Printing at the last session of Congress, the report of the Specifications' Committee must be in the hands of the Joint Committee by December 6. Bids will be opened probably the latter part of January, with awards being made one week later, which is the usual procedure. The delivery of contracts will begin at the beginning of the fiscal year at the Printing Office on March 1. Two new members have been added to the sub-committee, including E. G. Weston, representing the Treasury Department and E. O. Reed, chief of the testing laboratory of the Government Printing Office.

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PHILADELPHIA PAPER TRADE IS ACTIVE IN MOST LINES

Several Mills, However, Report That There Has Been Some Tendency to a Let Up in the Demand Since Labor Day—Big Get-Together Meeting of Men Engaged in the Graphic Arts and Paper Lines in the Philadelphia District Is Planned for Some Time About Mid February of Next Year—Frederick E. Hastings Is Elected President of Esparto Papers.

[FROM OUR REGULAR CORRESPONDENT]

PHILADELPHIA, November 21, 1922.—The selling experience of the Philadelphia jobbers during the week was not consonant with that pictured by sales representatives of several mills, in particular one representing a Bristol producer and the other a general line who reported on their round a check to the increase of sales particularly since Labor Day. Philadelphia distributors both fine and coarse found no let up in the demand which is coming to them from all character of consumers and from some who have not hitherto actively been in the market. There was nothing approaching boom conditions or feverish buying—simply a steady continuous increase of a sound and wholesome market, regarded by all as merely the forerunner of an era of many months and probably of several years at least of prosperous times. President George W. Ward of the D. L. Ward Company, one of the speakers at a social and business session of the Blank Book Manufacturers and Paper Rulers Division of the Typothetæ of Philadelphia which met at the Meridian Club, declared that as a result of the close study he made on his recent trip through the West and of day to day observations right here at home he was convinced that there might be anticipated with certainty at very least a three-year period of profitable merchandising in the paper industry.

There were no marked features in the week's paper market and while there were still further re-adjustments and slight increases as in the case of the Falpaco blanks and the lines produced by the A. M. Collins Manufacturing Company, there were really no horizontal increases but values continued firm on all grades of both fine and coarse paper.

Nor was there substantial change of conditions in the market for either paper or rag stock. While packers of old papers were a little apprehensive that prices might soften, quotations continued without substantial change from the preceding week. There is only one grade of stock whose demand is slightly less than the accumulation in the warehouses of the distributors and which therefore can be moved only by a price concession, and that is the very cheapest grade. It is possible to ship goods out with little restriction on the lines of the Pennsylvania and the Reading Railroad Company proper but there is virtually an embargo on shipment over the tracks of connecting companies.

Plans for Big Get-Together Meeting

Tentative plans for what is designed to be the biggest meeting in a get-together session of good will and fraternity between all the branches of the graphic arts in the widest possible interpretation of that term were made at a joint session of the Trades Relation Committee of the Paper Trade Association of Philadelphia and of the Typothetæ of Philadelphia at a meeting in the Bourse restaurant on Tuesday noon of last week. It is proposed to have a meeting about mid-February and to invite to it all in any way concerned in the graphic arts and in paper as the medium for its circulation. Distinguished speakers are to be invited, among them governor-elect, Gifford Pinchot, prominent disciple of forest conservation and to it are to be bidden as participants all the paper distributors, the paper stock dealers, representatives of the paper mills, all the printers of the city, irrespective of affiliation with the Typothetæ, the blank book makers, the stationers, paper rulers, electrotypers, photo-engravers, lithographers, advertising writers and agency representatives, sterotypers, everyone who comes directly into contact with all the method of the dissemination of knowledge through the printed page.

The Typothetæ Trades Relations Committee consisted originally of Wm. Sharpless, S. Clayton Wicks and William F. Fell, but for the purposes of co-operation in the arrangements of this graphic arts banquet and social session there have been added H. B. Hatch, Samuel McFetridge, E. C. Richter of the Franklin Printing Company; Charles J. Richter of the Richter Printing Company; Clifford Ware, T. J. Debery, A. L. Steelman, W. Franklin Hodges and A. J. Dando. The Trades Relations Committee of the Paper Trade Association consisting of George W. Ward, Arthur B. Sherrill, Leon Beck, Morgan H. Thomas and Harry F. Donance may be supplemented by additional members. The Manufacturers' Club will probably be decided upon as the place of gathering and mid-February as the time. While an enjoyable banquet will be served, it is the present thought not to make that feature too elaborate; to dispense with all formality and to plan a gathering where all in the trade will have an opportunity, under the most favorable circumstances, of meeting each other and of discussing common problems face to face and in an atmosphere of good will. Tentative plans also call for not more than two or three speakers of distinction; men who shall be qualified by some connection with the graphic art to give a larger view of the whole problem and to give the dignity to the occasion which its importance warrants.

Organizing Esparto Papers

The first step towards the formal organization of the newly incorporated Esparto Papers has been taken by the election as president of Frederick E. Hastings and of the secretary and treasurer of R. C. B. Hay. The board of directors shortly will be chosen and it is known that on the board there will be Arthur C. Hastings, former president of the American Pulp and Paper Association and still actively identified with many ventures in the paper and allied industry. He is a brother of President Hastings, widely known in the trade through long connection with the Dill & Collins Company. Secretary and treasurer, R. C. B. Hay, who recently came to this country from England and, is thoroughly acquainted with paper manufacturing conditions in England and in Scotland, where will be produced the several lines of book paper made of the famous esparto fiber, which the firm will import. Esparto Papers is now organizing a distribution system and to that end has appointed as distributors for the New York district Blake & Decker, 50 East 11th street, New York, and the American Paper Mills Corporation, 261 Eleventh avenue, New York. Though the names of the several grades which will be carried have not yet finally been adopted, they will consist of a feather weight book with substance as little as forty-five and running up to 120; of the medium finish antique of the same weight and of a super calendar book paper. Dummies containing samples of these lines in their various substances now are being prepared, but will not be ready for some time. Announcement of distributors in the Philadelphia district also shortly is expected.

Adesta Paper Co. Applies for Charter

Formal notice has been given in this city of the application to be made to the Governor of Pennsylvania on December 4, for a charter for the Adesta Paper Company, "the character and object of which is to manufacture, sell and otherwise deal in paper and to construct, purchase or lease plants and other facilities for the manufacture thereof." Those who are making the application for the charter are James B. Mortimer of 149 Broadway, New York, the promoter of the new enterprise and two others, Robert V. Bolger and Ziba K. Graham. The solicitor for the new company is Joseph M. Dohan, member of a family which for many years held title to the famous old Ivy Mills in Chester County, the good will of which recently

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passed to the Diamond State Fibre Company. Mr. Dohan said today, that being counsel, he was not in a position to discuss the matter of the new company, the prime mover of which is Mr. Mortimer. It became known, however, that the new company proposed to take over the old Ivy Mills located at Glen Mills and which have a history extending back to the early days of paper-making and which were famous for the manufacture of the note paper used in the printing of the United States currency, and although verification cannot be secured as the mills are not yet ready for operation there is a well founded report that their production will be of Kraft. The mills have been idle for the past year and a half and during that time, the machinery has been completely remodeled and modernized.

"Hand Craft Cover"

A real and striking novelty in cover papers has just been taken on as exclusive Philadelphia agents by the Charles Beck Paper Company, 6th and Chestnut streets. It will be marketed under the title of "The Hand Craft Cover." The paper is the production of an individual just engaged in this work who applies to the surface of the cover stock virtually the same methods that are used in the hand tooling of leather. The surface of the hand craft cover indeed has a verisimilitude to fine leather with all its peculiarities of grain and texture and in addition has a wonderful metallic luster where such an effect is desired. Another display in the Beck publicity department which engaged trade attention during the week were the original sketches by Treidler, Cleeland, Barton and others made for the Strathmore Paper Company to illustrate its slogan that paper is part of the picture, and as well the original wood block cut out by Treidler and used in connection with this line of Strathmore expressive paper advertising. The Beck Company, together with the four other Strathmore distributors who last week were hosts of several hundred printers and publishers, advertising agents, engravers, lithographers and stationers from Philadelphia and nearby cities at the memorable entertainment and evening of instruction at the Hotel Adelphia was in receipt during the week of letters and personal commendations.

General News of the Trade

A permit was issued during the week to the J. S. Rogers Company for the construction of a six-story warehouse building measuring 127 x 180 feet at the southwest corner of Fifth and Willow streets for the Paper Manufacturers Company at an estimated cost of $500,000. Clarence E. Wunder is the architect. Announcement of the plans of the Paper Manufacturers Company in connection with this mammoth new structure, recently was made in these columns.

Morris P. Lowe, lately of the defunct Lowe Paper Company and previously in various locations in this city engaged in the coarse paper business, has re-established himself with headquarters on the second floor of the eastern warehouse building, Delaware avenue and Poplar street, where he is stocking a coarse paper line.

Riegel & Co., 6th below Arch street, have just added to their stock but too late for inclusion in the body of their new price-list and catalog, the asset bond, a tub sized, loft dried, fifty per cent rag product, carried in white only, in many sizes and substances and a supplementary page of prices and description therefore has been prepared for inclusion in the forthcoming list.

The Advance Ledger made by the L. L. Brown Paper Company has just been stocked by the Thomas W. Price Company who will carry it exclusively in Philadelphia.

Exceptional activity was reported by all the members of the Paper Rulers and Blank Book Manufacturers Division of the Typothetæ of Philadelphia at its very largely attended meeting last week, the only serious limit on production being not absence of orders but shortage of labor, particularly of apprentices. So acute has this situation become that there is under consideration the project of establishing a school for the training of apprentices somewhat along the lines successfully followed by the Typothetæ of Philadelphia in its school for composition.

Various offices in the Paper House of Lindsey Brothers, 806-808 Sansom street, are to be re-arranged for the convenience of the printing patrons and the trade customers in general. The sales offices now in the rear are to be removed to the fore and will adjoin the executive offices while the shipping department and the stock rooms are to be confined to the rear. Horace R. Lindsey, member of the firm, is confined to his home suffering from an attack of the grippe. Joseph H. Ottenburg, a member of the sales force who recently joined the staff of salesmen in the November election was elected to serve on the executive committee of the 42nd Ward Republican Club, representing the Thirtieth District. Mr. Ottenburg is taking care of the coarse paper end of the West Virginia Paper and Pulp Company for which Lindsey Brothers are distributors. He formerly was connected with the R. T. Moorehouse Company.

Celebrates 50th Anniversary

[FROM OUR REGULAR CORRESPONDENT.]

COLUMBUS, Ohio, November 20, 1922.—In celebration of its fiftieth anniversary in the paper industry, The Central Ohio Paper Company conducted a four days' educational campaign on paper, November 13 to 16. As a result, over 1,000 business men and printers of central Ohio have a better knowledge of paper and how it is made.

For the most part, the campaign consisted of lectures and moving pictures before the Rotary, Kiwanis, Optimist, Advertising and Exchange Clubs. The pictures, furnished by the S. D. Warren Company showed the manufacture of book paper from the cutting of trees to the finished product. Jesse W. Clark and W. D. Rogers, of the S. D. Warren Company were the principal speakers.

On Tuesday evening, November 14, a smoker was held for printers of Columbus and central Ohio at the lunch room of the paper company's Columbus building, at which over 200 were present.

The Central Ohio Paper Company is rounding out its half century in the paper field with a record for development of which it may well be proud. Starting as a general wholesale paper house in Columbus in 1872 it has three times moved into larger quarters until today it occupies the largest individual building devoted to the paper trade in the United States.

In addition, the company has built and maintains two large stores at Cleveland and Toledo and branch offices at Pittsburgh, New York, Detroit, Indianapolis, Dayton, Akron, Wheeling and Huntington.

One remarkable thing about the company is its unchanging personnel. Of the original officers, all but one remain. These are: O. A. Miller, president, who incorporated the company and as its head since the beginning is largely responsible for its development; F. E. Miller, vice-president and K. D. Wood, secretary. The other two original directors, the late J. H. Friend, of Dayton and the late F. Holford, of Springfield, were succeeded by Albert M. Miller, vice-president and general manager and T. C. Morris, who complete the directorate.

The company handles practically everything in paper, being the only general paper house in Columbus. In addition to handling many nationally advertised lines of papers it is responsible for the inception and successful marketing for over two generations of "Swan Linen," one of the best known linen writings. It is distributor for the papers of the S. D. Warren Company, B. D. Rising Paper Company, The Oxford Paper Company, The Hammermill Paper Co., The A. M. Collins Company, The Strathmore Paper Company, The L. L. Brown Paper Company, The Byron Weston Company, White and Wyckoff's and Keith's stationery; Buckeye Covers, Old Hampshire Bond, Mosinee Kraft wrappings and many others. It is well known that no other house in the U. S. more completely covers the entire paper field.

XUM

BUSINESS IN PAPER AND PULP STEADY IN TORONTO MARKET

Prices Seem Well Adjusted and Matters Are Said To Be Nearer Stabilization Than They Have Been in Many Months—R. A. McInnis, Manager of Abitibi Power and Paper Co., Delivers Instructive Address on the Development of the Pulp and Paper Industry in Northern Ontario —Mattagami Pulp & Paper Co.'s Plant at Smooth Rock Falls, Now Being Run on Profitable Basis.

[FROM OUR REGULAR CORRESPONDENT.]

TORONTO, Ont., November 20, 1922.—Business in the pulp and paper line continues with a steady swing and is marked on the whole by satisfactory results. The consuming and jobbing trade is now pretty well convinced of the fact that prices are adjusted for some weeks to come and that matters are nearer stabilization than they have been for many months. The mills complain that orders are still small compared to what they were a couple of years ago but there is an ever increasing volume making the aggregate large. The only change recently is that sulphite bristols went up on an average from five to ten per cent and white blanks, which came on the Canadian market a few weeks ago, has stiffened in price in sympathy with the trend of values on the other side of the line.

The printing trade is still rather quiet and manufacturing stationers are not so rushed as they were, having turned out all their Christmas novelties. Envelope producers are fairly busy. Pulp prices continue stiff and dry ground wood pulp is now quoted by a number of firms, at the mill, at forty dollars per ton. On the whole, the pulp and paper trade is more normal today than it has been for some time.

In the waste paper market there has been some weakening in values as mills are reported to be pretty well stocked up. Dealers say there is a slackening off in all grades. New cotton cuttings are holding firm but there is no enthusiasm in the market and lower grades are getting harder to sell. Roofing stock is weaker and prices have dropped somewhat.

Great Wealth of Northern Ontario

An instructive address was delivered last week before the members of the Toronto Board of Trade by R. A. McInnis, manager of the Abitibi Power and Paper Company, Iroquois Falls, Ont. He referred to the rapid development of the pulp and paper industry in Northern Ontario and the big areas of good soil. One of the requirements of present and future prosperity was more effective means of checking forest fires, which were a heavy drain on the pulpwood resources of the province. Not all fires, he stated, could be prevented but a number of them could be by greater care and precaution. He believed there should be more funds available for forestal and protective work in the north country which was not a vast tract of barren, rocky territory as many supposed. Good roads were also essential for the lumbering, pulpwood and agricultural interests.

Will Erect Paper Bag Factory

Kilgour Brothers, of Toronto, who are manufacturers of paper bags and paper boxes, have had plans drawn for the erection of a new, commercial paper bag factory at Windsor Mills, Que. Tenders are now being called for the construction of the plant. The building will be two stories, with basement, 90 x 120 feet, of mill and brick construction, with concrete and spruce floors and six metal skylights.

Now Operating on Profitable Basis

The Mattagami Pulp and Paper Company whose plant is at Smooth Rock Falls, Ont., is now removing on a profitable basis. The output of easy bleaching sulphite is considerably over a hundred tons daily and the market for the product has considerably improved of late. The company is in receivership and is being operated for the creditors, bondholders and shareholders by the receiver. The present profit on operation makes the outlook hopeful. When reorganization comes the shareholders are likely to have a substantial interest. The Mattagami Company has a capitalization of 20,000 preference shares and 50,000 shares of common, of which 30,000 shares were held for debenture conversion. There are outstanding also $1,856,000 of six per cent, first mortgage bonds and $3,000,000 of seven per cent, convertible debentures. No interest has been paid for some time on either the bonds or the debentures.

Big Pulp Plant Waiting on Hydro

The Ontario Hydro-Electric Power Commission has not yet come to terms with the Great Lakes Pulp and Paper Company of Port Arthur which is desirous of erecting a three million dollar plant in that city. The company has not been able to secure the necessary power for its great enterprise. L. A. Alstead of the Great Lakes Pulp and Paper Company recently presented his case before the Gregory Commission. The Hydro interests have so far failed to agree to a contract for 10,000 horsepower of energy for which the paper company is a prospective customer. The principal point at issue between the Hydro Commission and the company is the refusal of the former to draft its contract in terms which will make it enforceable in the sight of the Great Lakes concern. Mr. Alstead claims that the Hydro demands a one-sided contract, not acceptable to his lawyers or bankers. The Hydro demands that if the company fails to take the power contracted for, it must pay anyway, but if the Hydro fails to supply the necessary power, the company cannot bring action in the courts.

Great Winter Crop of Pulpwood

It is reported that about two hundred and fifty thousand cords of pulpwood will be harvested in the district of Port Arthur this season. About one hundred and sixty-five thousand cords will be for export and the remainder for local use. All the paper companies of the North have more men in the bush this season than ever cutting wood, some of the larger concerns taking out as much as sixty thousand cords each. Many jobbers also have big commissions to execute. There will also be a record cut of railway ties.

Notes and Jottings of the Industry

Dan Daverin, who for several years has been superintendent of the plant of the Provincial Paper Mills at Thorold, Ont., has resigned. Charles F. Bus, of the Mille Roches division of the company has been made general superintendent of the Thorold and Mille Roches mills. Gus Conarroe will be assistant superintendent of the plant at Thorold and E. Stansel of the one at Mille Roches, Ont. Both units are working to capacity at the present time.

William Gorman, Eastern representative of the Provincial Paper Mills Company with headquarters in Montreal, was in Toronto last week on his way to Australia on a business trip in the interest of the organization's export trade. During his absence his work will be looked after by Arthur Jewett.

W. H. Sherriff, of the Hodge-Sherriff Paper Company, Toronto, who has been on an extended business trip throughout Western Canada, has returned and reports that the outlook in the kraft paper line is improving.

Fire did damage to the extent of several thousand dollars to Levi Bros. in their waste warehouse on the Don Esplanade, Toronto. The buildings were of wood and galvanized iron and were filled with waste wiping rags.

The new sulphite pulp plant of the Spruce Falls Company, of Neenah, Wis., which has been erected at Kapuskasing, Ont., will soon be put in operation. There are four digesters and the output will be about 120 tons daily. The company has its own rossing plant and the wood supply for the coming year has been taken care of.

XUM

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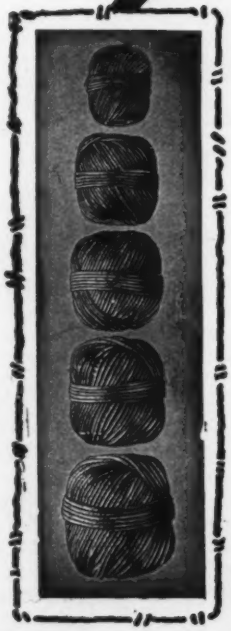

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CORDAGE

CELLULOSE PRICES AS COMPARED WITH PRE-WAR PRICES

By Hans Lagerloef, President of the Lagerloef Trading Co., New York

These comments will not deal with costs and their relations to profits—figures will simply be given to compare prices of this year and as they were prior to the war.

The cellulose industry in Europe, as far as stocks on hand are concerned, is in a very healthy condition. In Central Europe most of the goods are used for reparations or for consumption nearby —some small parcels, as an instance, I understand have found their way to our country.

The Norwegian cellulose industry has had, in the deflation following the war, to stand enormous losses, and it is to be regretted that they are facing an ever-increasing difficulty for their supply of wood. The disintegration of Russia and the creating of several free Baltic States mainly brought this about.

Finland Increasing Its Output

Finland is steadily increasing its output; deliveries from there are from hand to mouth, so closely are the mills engaged. What is of special interest regarding Finland is the fact that that country is earnestly bent upon taking the place held before the war by the Germans in regard to standardized uniform qualities, uniform and most up-to-date packing, etc. The cellulose industry in Finland certainly is progressing.

The main factor in cellulose in Europe today is of course Sweden. Early in the year stocks there were of such magnitude that some apprehension was felt as to what would happen to prices generally and what stocks would have to be carried over the winter of 1922. The wonderful picking up of business here in the States had its decided helpful influence all along the line—times became better also in Europe and all over, and the Swedish supplies of cellulose dwindled down and at the time of my departure sales were being made so freely and of such large tonnage that the supplies possibly left over in Sweden this year will mainly consist of parcels not getting tonnage, or simply being frozen in.

Extreme Differences in Price

It is of interest to compare the fluctuations in prices for the various grades of cellulose during the period, say 1900 up to the war in 1914 with the year of 1922 and note the percentage of the extreme differences in prices. A comparison of this kind is permissible because during the period 1900 up to the war conditions could be called normal. The year of 1922 can be called a fairly normal year as we have recovered from the first and greatest installment of the deflation period which followed as a consequence of the general war frenzy. During the period 1900 and up to the war Kraft pulp fluctuated between $1.62½ to $2.35; strong unbleached sulphite between $1.70 to $2.35; bleached sulphite from $2.25 to $3.50, and other grades in proportion. Consequently, the range of the extreme difference in price on an average for these commodities during this time was about 50 per cent. Before the war the high of prices during 1900 and up were reached in 1906. In 1907—the year after the peak of the inflation, severe punishment was meted out to us in that year of panic, as we all know. It took us years to recover. This panic came at the time when prices had increased 50 per cent from the low. During the year of 1922 we have seen remarkably wide fluctuations in prices considering that the deflation after the war, at least for the time being, should be over. Kraft pulp has fluctuated between $2.25 and $3.00; strong unbleached sulphite between $2.40 and $3.00; bleached sulphite between $3.65 and $4.50.

At the Top of Quotations

This year prices have increased approximately 30 per cent over the low and we are practically at the top of quotations now. With small supplies in the warehouses of the manufacturers, an excellent demand for cellulose from all over and small supplies on the docks here, the market is strong but rather inactive—therefore the present situation is interesting, but also fraught with dangers and I must hope that common sense will rule. There was a feeling in Europe and it is also shared here, that should prices go up another 20 per cent, it would make Kraft and strong unbleached sulphite rule around $3.50, which would mean a total increase of about 50 per cent, we would have a parallel to the extreme peak in prices during the period 1900 and up to the war of 1914 and chances are that the same result would ensue, i. e., this inflation be followed by an abrupt deflation and trouble and shutting-down by everybody. This question was very much under discussion in Europe and people were considering how to keep prices for cellulose at the present time within reasonable bounds. The manufacturers over there do not want to push limits to the utmost and certainly not to figures, which, according to the previous arguments and reasonings, proved to be so extremely disastrous once before.

The Wisest Policy

There is no question but that it would be extremely beneficial to all if this policy of an averaging of prices could be carried out, because what concerns our manufacturers of paper here most is not so much the cost of their raw material, in this case cellulose, but they want to know that they are assured in the first place of a supply and equally as important, a supply that will cost on an average, all of them about the same.

There is nothing strange that prices for chemical pulps today are approximately 50 per cent higher than they were before the war, because considering that our dollar is about the best money in the world, the cost of living in the States today is about 60 per cent higher than before the war.

The index for Sweden and the money of that country is also at par, is even less favorable or about 75 per cent higher than before the war.

Finland, as an instance, has a very much depreciated currency and the index there according to last figures is 1,134 compared to 100 before the war.

Increasing Stability in Paper Market

"The tone of the paper market has been one of increasing stability to a degree that has not been felt for many months past," says the monthly market review of The Paper and Pulp Industry, the official bulletin of the American Paper and Pulp Association to its members.

"That the tendency, owing to the certainty of increasing costs, will be upward for some time to come seems certain. The tendency toward a runaway market, which was feared in some quarters, was moderated by the discussions at the recent Chicago convention, bringing the realization that efforts to take advantage of the return of prosperity by forcing prices to abnormal levels might be unfortunate for manufacturer and merchant alike.

"Prices of raw materials entering into the manufacture of paper have like wages, shown a tendency to advance.

"The production and shipments of newsprint paper fell off somewhat from the high records set in August, although at present levels the industry is far ahead of a year ago. September consumption of news print increased to 172,802 tons, the largest for several months. Stocks showed a little change. There was a slight increase in the production of paper board."

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for the
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Into this ½ and 1 ton electric hoist, we have incorporated the same features that have made "Shepards" the best known and most widely used electric hoists in America. It has famous "Balanced Drive," enclosed unit constructions, special hoist motor, oil bath lubrication, Hyatt Roller Bearings—all of which mean steady, consistent operation, care-free service and an *ever-responsive hoist.*

LiftAbouts are made on a quantity production basis and are sold at a price which you'll find much lower than you may have thought a good hoist would cost.

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SHEPARD ELECTRIC CRANES & HOISTS

BIDS AND AWARDS FOR GOVERNMENT PAPER

[FROM OUR REGULAR CORRESPONDENT.]

WASHINGTON, D. C., November 22, 1922.—The purchasing officer of the Government Printing Office has received the following paper bids:

17,500 pounds 20½ x 29—50 Antique Printing Paper: Dobler & Mudge, $.123 per pound; Mathers-Lamm Paper Company, $.156; R. P. Andrews Paper Company, $.14 and Whitaker Paper Company, $.1347.

500,000 pounds 24 x 36—32 White News Print Paper: International Paper Company, $.043 per pound; Maurice O'Meara Company, $.0408.

56,000 pounds White Writing Paper, No. 13: Old Dominion Paper Company, $.0962 per pound; R. P. Andrews Paper Company, $.087; The Aetna Paper Company, $.0944; Maurice O'Meara Company, $.111; Whitaker Paper Company, $.0993.

100,000 White Linen Shipping Tags, 5 5/16 × 2⅝", No. 6: The Denney Tag Company, Inc., $3.59 per M; R. P. Andrews Paper Company, $3.42; International Tag Company, $3.19; Whitaker Paper Company, $3.48; American Tag Company, $3.59; Dobler & Mudge, $2.95; Dennison Manufacturing Company, $3.58; Gimbel Brothers, $3.44; Old Dominion Paper Company, $2.96; Campbell Paper Company, $3.39; Knickerbocker Supply Company, $4.98.

80,000 pounds 26 x 38—35 White M. F. Printing Paper No. 1 in 48" rolls: Bryant Paper Company, $.067 per pound; Old Dominion Paper Company, $.0743 per pound; Orchard Paper Company, $.0743.

100,500 pounds 31¼ x 45½—67 White S. and S. C. Printing Paper: R. P. Andrews Paper Company, $.0798 per pound; Bryant Paper Company, $.0721; Kalamazoo Paper Company, $.075; Old Dominion Paper Company, $.07897; Orchard Paper Company, $.0732.

15,700 pounds 41 x 52—157. Single-coated Book Paper: $.099 per pound; Whitaker Paper Company, $.0885; Kalamazoo Paper Company, $.09; Bryant Paper Company, $.095; B. F. Bond Paper Company, $.102.

54,023 pounds White Ledger Paper: R. P. Andrews Paper Company, $.248 per pound; Whitaker Paper Company, $.277; Old Dominion Paper Company, $.29749 and $30249; Carew Manufacturing Company, $.274.

Bids will be opened at the Government Printing Office on November 24 for the following:

10 reams 40 x 60", Rope Manila Paper.

The purchasing officer of the Government Printing Office has received the following paper bids:

21,600 pounds Cover Paper 20 x 25, Dawn, Gobelin Blue, Kahki and Suede; Knowlton Brothers, $.0856, $.0906, $.0956 and $.0881; Reese & Reese, $.103; Mathers-Lamm Paper Company, $.1065; Dobler & Mudge, $.1085; The Whitaker Paper Company, $.1063; R. P. Andrews Paper Company, $.0883; Thos. Barrett & Son, $.1185; The Old Dominion Paper Company, $.10949; D. L. Ward Company, $.1095.

215,000 pounds 36 x 48—86 White S. & S. C. Printing Paper: R. P. Andrews Paper Company, $.0798 per pound; Bryant Paper Company, $.075; Dobler & Mudge, $.0747; Kalamazoo Paper Company, $.075.

800 pounds 20 x 30—8 White Tissue Paper: The Whitaker Paper Company, $1.37 per ream; R. P. Andrews Paper Company, $2.40; Old Dominion Paper Company, $2.447; Geo. W. Millar & Co., Inc., $2.65; Mathers-Lamm Paper Company, $.93; Maurice O'Meara Company, $2.96.

1,000 sheets 20 x 31—Brown Paperoid: R. P. Andrews Paper Company, $63.80 and The Whitaker Paper Company, $59.90; Mathers-Lamm Paper Company, $49.50; Alvah Bushnell Company, $79.20.

Bids will be opened at the printing office on November 24 for 1,000,000 pounds 22½ x 28½—104 Postal Card Cream Bristol Board

The Carew Manufacturing Company has been awarded the contract by the Purchasing Officer of the Government Printing Office for furnishing 54,023 pounds (805 reams) of various sizes white ledger paper at $.274 per pound.

The Whitaker Paper Company will furnish 15,700 pounds (100 reams) of 41 x 52—157, single coated both sides book paper at $.0885. Bids for these items were opened on November 13.

The Purchasing Officer of the Government Printing Office has announced the following paper awards:

The Old Dominion Paper Company will furnish 1,810 pounds of 22½ x 28½—181 pounds white index bristol board at .209 cents per pound, bids for which were opened on October 23.

The Old Dominion Paper Company will also furnish 42,000 pounds (300 reams) of 24 x 38—140 high finish sulphite manila paper at .06499 cents per pound. The Bryant Paper Company will furnish 10,000 pounds (200 reams) of 25 x 38—50, white antique printing paper at .0732 cents per pound. The Old Dominion Paper Company will furnish 1,725 pounds (150 reams) of 17 x 28—11½ pounds, No. 9, glazed yellow bond paper at .2149 cents per pound, and the Ætna Paper Company will furnish 3,725 pounds (100 reams) of various sizes of the same paper at .1706 cents per pound. Bids for all of these items were opened on October 30.

The Mathers-Lamm Paper Company will furnish 50,000 pounds (50,000 sheets) of 26 x 38—No. 50 chip board at .0271 cents per pound. Bird & Son will furnish 10 reams of 36 x 48 grey press board at .11 cents per pound. George LaMont & Son will furnish 2,400 pounds of 22 x 34—No. 24 grey M. F. safety writing paper at .238 per pound. The Mathers-Lamm Paper Company will furnish 225 pounds of 19 x 24—4½, facing sterreo tissue paper at $3.18 per ream. The R. P. Andrews Paper Company will furnish 80,000 pounds (2,500 reams) of 22 x 34—32, No. 16 high M. F. yellow writing paper at .088 cents per pound. Bids for these items were opened on November 1.

The Whitaker Paper Company will furnish 80,000 pounds (32,000 sheets) of No. 2 quality, 25 x 30—No. 20, binders' board at $70 per ton, and the same firm will also furnish 40,000 pounds of No. 1 quality of 26 x 36—No. 11 binders' board at $77 per ton. Bids for this paper were opened on November 3.

George LaMont & Son will furnish 610 pounds of 17 x 28—30½, No. 24 pink safety writing paper at .238 per pound, bids for which were opened on November 6.

The Bryant Paper Company will furnish 80,000 pounds of No. 1 white M. F. printing paper in 48" rolls at .067 per pound, and the same firm will also furnish 100,500 pounds (1,500 reams) of 31¼ by 41½—67, white S and SC printing paper at .0721 per pound, bids for which were opened on November 13.

Prices Firm in Boston Market

[FROM OUR REGULAR CORRESPONDENT.]

BOSTON, Mass., November 20, 1922.—Boston paper merchants are confident that there will be no runaway market this year and that prices will remain where they are for some time. Conditions in the Hub have been improving steadily for some time and the printers and retail houses are beginning to realize that prices will go no lower and are showing more confidence in the market and buying their supplies.

In some lines, Boston merchants state, there is practically no surplus stock at all anywhere. If there is, they state, it is at the mills and not on the shelves of the paper merchants. Practically no concern today, they find has even a normal, let alone a surplus supply, of printed forms.

Some of the New England mills are able to fill only about 56 per cent of their orders even today but conditions are improving.

XUM

ROGERS WET MACHINE

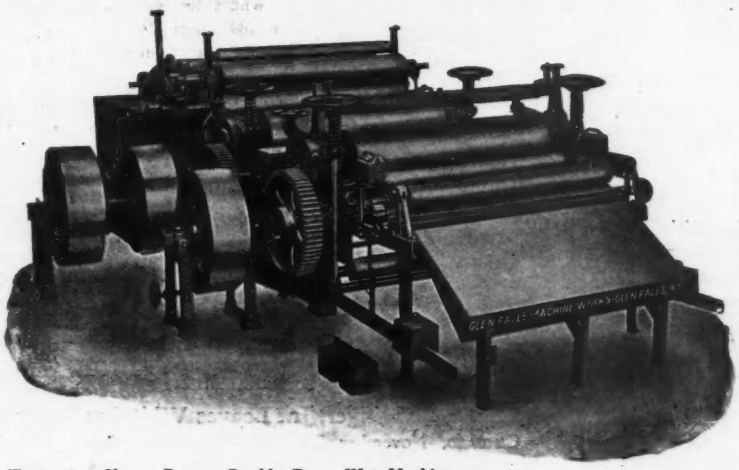

Illustration Shows Rogers Double Press Wet Machine

FOR CHEMICAL PULP—including Sulphite, Sulphate, Soda, also Cotton and Waste Paper fiber.

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CAPACITY—either type 25-30 tons air dry stock per 24 hours.

SHEETS produced by the Double Press Machine uniformly 48% dry. By the Single Press Machine uniformly 40% dry. There is no fold to contain excessive moisture. Sheets are handy size, 33"x36", and are folded once into most convenient bundles for storage, for the beater or for shipping. By this great capacity, high dry test, small amount of floor space per ton pulp produced, exceedingly low cost for labor and maintenance, users are assured that the machine will completely pay for itself within one year, and are promised a handsome return on their investment.

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Why?—Two reasons. (1) The wonderfully strong high-quality construction of Republic Belts themselves. (2) Our knowledge and experience in prescribing just the belt to meet your individual needs most effectively.

For paper mill work "Double Cross" and "Invader" are still unsurpassed for long life and low up-keep. We recommend them. Let us serve you.

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New York Chicago Philadelphia Minneapolis
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REPUBLIC BELTING

XUM

Obituary

Charles E. Bush

Charles E. Bush, prominent in the book paper trade, and well known in the banking and business world, quietly passed away November 16, 1922, at his residence, 233 West 83rd street, New York.

Two years ago while attending a banquet of the Lake Champlain Association at the Waldorf-Astoria, he contracted a cold from which he never fully recovered. He was one of the organizers of the Association, and on account of his acquaintance and interest in the Champlain Valley he secured more members for the Association than any other member.

His father Edson Bush and mother Catherine Rich (Wright) Bush, settled in the Champlain Valley, in the village of Shoreham, Vt., where the son Charles was born September 16, 1843. He prepared for college at the Newton Academy, Shoreham, Vt., and entered Norwich University in September, 1860, where he remained nearly two years, at which time, the Civil War having been declared, he gave up his college career and enlisted in Company B, 7th Squadron, Rhode Island Cavalry, the famous "College Cavaliers" (Q. V.) June 19, 1862. He was promoted Sergeant Major in July, 1862, and was mustered out of service October 2, 1862.

In December, 1868, he was married to Agnes Hitchcock, of Shoreham, Vt., who survives him as well as a sister, Agnes K. Bush.

Mr. Bush was a member of the Union League Club and Aldine Club of New York City.

In 1904 the Norwich University, Northfield, Vt., in recognition of his work as a business man, conferred upon him the degree of B. S. as for 1863.

Mr. Bush engaged in banking in Orwell, Vt., in 1870, starting at a small salary as cashier, but was soon promoted to president on account of his success in building up the business of the bank. He was a tireless worker and hours meant nothing to him when he had a task to complete or when it was necessary to have details to enable him to grasp a difficult business problem.

In 1893 Mr. Bush saw an opportunity with the Ticonderoga Pulp and Paper Company and on account of his banking connections succeeded in raising additional capital which the company was greatly in need of at that time. Competition in book papers was keen for many years and he with other manufacturers in the same line had a hard road to travel. Through his manly principles he taught the entire trade the folly of cut-throat competition, and succeeded in placing the industry on a business basis for others as well as himself. He was a great harmonizer and could always see the other side of the story; never too busy to hear one's troubles and always willing to lend a helping hand; keen when it came to driving a close bargain, but more willing to forgive than to criticise. His great pride was in getting young people started in business and then helping them to better positions as many can attest.

Mr. Bush sold out his interest in the Ticonderoga Pulp and Paper Company, to the Riordon Company, Ltd., of Canada, in November, 1917, and since that time he had retired from active business.

Charles Henry Hutchins

[FROM OUR REGULAR CORRESPONDENT.]

SHREWSBURY, Mass., November 18, 1922.—Funeral services for Charles Henry Hutchins, president of the United States Envelope Company since 1898, who died at his home here early Wednesday morning in his 78th year, were held here yesterday. Mr. Hutchins was formerly president of the Crompton & Knowles Loom Works and at the time of his death chairman of the board of directors of that company.

He was born in East Douglas and educated in the grammar and high schools there. He began to work in an axe factory where his father was superintendent and entered the dry goods business in Worcester in 1867. After seven years of that line he left to manufacture tape and webbing and in 1884 became associated with the Knowles Loom Works where he was advanced to president which position he held from 1897 until 1917. He had been chairman of the board of directors and a member of the executive board since 1917.

He was also vice-president of the People's Savings Bank and a director of the Worcester Trust Company, also trustee of several Worcester hospitals. He married Laura N. Nicolle in 1918 who survives him.

W. A. Whitney

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., November 18, 1922.—The death of W. A. Whitney occurred here on Monday last. Mr. Whitney who for years had been identified with the paper industry had been in ill health for a long time. He was for many years general manager of the Emerson Paper Company of Sunopee, N. H.

Henry Junginger, Jr., Leaves Whitaker Paper Co.

CHICAGO, November 20, 1922.—Henry Junginer, Jr., who has been connected with A. L. Whitaker in the paper business for 27 years, has announced his retirement from the Whitaker Paper Company, effective December 1. Mr. Junginger first entered the paper business 27 years ago as general assistant to A. L. Whitaker, who was at that time just going into business for himself at Cincinnati. Seven years later Mr. Junginger was one of the organizers of the Whitaker Paper Company, of which he became the treasurer five years subsequently. This position, together with his membership on the board of directors he held without interruption until January of the present year, when he was succeeded as treasurer by Robert B. Burch, a son-in-law of President Whitaker. Mr. Junginger, at that time, was made comptroller of the company and his headquarters were transferred from the home offices of the company at Cincinnati to the Chicago branch.

Mr. Junginger has never taken a conspicuous part in the merchandising activities of the company which he helped to organize and of which he is the last of the original group to sever his connection, but in financial circles the efficiency, the integrity and the finesse of this modest gentleman have won for him recognition and respect. For years the manner in which the finances of the company were handled was a topic of admiring comment in paper circles. The large and steadily increasing volume of business done on a conservative capitalization, the small percentage of commercial losses, the building of substantial reserves, etc., all reflected credit on the man who was the financial head of the concern. Mr. Junginger successfully and brilliantly steered the financial policies of the company through the strenuous years of the company's growth from its very unpretentious beginnings through the period of its fabulous prosperity.

Hope Paper Co. Case Settled

BOSTON, Mass., November 20, 1922.—The action for deceit in which Francis D. Gilman and Edward M. Gilman of Brookline, Mass., sued Miss Minnie N. Linton of this city for $60,000 in connection with the purchase by the Gilmans of the entire capital stock of the Hope Paper Company of Pawtucket, R. I., for $75,000, collapsed last week when Judge Barrows entered judgment for Miss Linton for costs, by agreement of counsel.

Attorney Frederick A. Jones, when asked about the terms of settlement, did not explain specifically, but did say that the Gilmans, plaintiffs in the suit, not only allowed judgment to be entered against them but also paid Miss Linton a substantial sum for a general release that would insure them against any counter suit which she might bring.

XUM

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Howard Ledger

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White Waxed Papers
Household Specialties

AVP PAPERS

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OUR PAPERS ARE EXCELLENT FOR MEAT MARKETS, GROCERS AND GENERAL PACKING HOUSE REQUIREMENTS

Mountain Mill Paper Co.

(Write for Samples and Quotations)
MILLS AND GENERAL OFFICES
125 Forest Street, Lee, Mass.

New York Market Review

OFFICE OF THE PAPER TRADE JOURNAL,
Tuesday, November 21, 1922

New York's paper and pulp markets registered an increased activity during the past week, manufacturers, dealers and importers seeming, on the whole, very well satisfied with the volume of business. Deterring factors to a booming trade have been raw material scarcity, car shortage and railroad embargoes. The effects of the nation-wide railroad strike have never entirely disappeared, and, followed as it was by a period of intense industrial acceleration, every available freight car was pressed into service as soon as the roads had reopened. With the coming of embargoes on outgoing freight shipments from New York and vicinity, many cars were tied up that might otherwise have alleviated the situation in the transport of long overdue merchandise and raw materials. At the beginning of this month the shortage of cars was at its peak.

Practically all other obstacles in the way of healthy, substantial business have either faded away or are greatly diminishing in seriousness. The unemployment problem has practically ceased to exist. In every branch of industry decided employment gains have taken effect, and the paper trade has been no exception to this rule. Paper manufacturers have recently been forced to advertise for men to work in logging camps as well as in their pulp mills. Simultaneously, with the improvement in the tone of the basic industries demand for paper of all grades has increased. While this demand is not phenomenal in any field, with the exception of news print, it is the type of steady, solid business that can be relied upon to last.

The paper stock market has continued steadily to decline, although the conditions which have brought this about are believed to be false ones. With pulps rising and waste paper falling off in price, it is evident that there must be some halting place in the near future. Dealers in paper stock must, necessarily, make a profit, and manufacturers must, in their own interests, draw the line when soda pulp gets out of reach. When active buying of either is protracted for any length of time at the expense of the other, the law of supply and demand will serve automatically to regulate prices with greater efficacy than could artificial legislation.

News print was reported by one of the leading producers last week to be moving in tremendous volume, the consumption far exceeding any that has previously been known. Coincident with the amelioration in industrial conditions generally, an advertising boom has swept the country. Advertising rates have practically maintained their war time levels despite the decline in commodity prices. This has created some dissatisfaction among a few national advertisers, who do not take into consideration the fact that newspapers are greatly increasing their circulations in an effort to maintain the present advertising rates, which they believe to be fair. The manufacturer is paying more for his ad, but is reaching more prospective purchasers by so doing. This effort on the part of publishers has resulted in a tremendously increased use of paper. It is only necessary to examine the special features and circulation builders of the daily papers throughout the country, to say nothing of the increased size of weekly and monthly periodicals to realize this.

The book paper market has continued to firm during the last week, and export business exhibits signs of recovery from the slump it has been in for some time. Prices have been steady.

Tissues continue to stiffen in tone, although the price advances of several weeks ago were the last to go into effect. But few mills are quoting on a weekly basis and prices must be regarded as nominal owing to the unsettled condition. Embargoes and lighterage difficulties are not the least of tissue manufacturers' worries, and the insistent demands of the trade together with the scarcity of available stock may soon make for higher price levels.

Kraft continued to move actively, with the demand from the consuming trade steadily increasing. The market has a firm tone and it is believed that the first of the new year will see another upward revision in prices.

Although the prices on the news grades and other cheaper qualities of waste paper that enter into the manufacture of paper board are considerably lower at present than they have been in some time, manufacturers are confronted with transportation problems that delay their contract shipments, and thus maintain present price levels. The tone of the market is very firm.

Mechanical Pulp

Declining stocks, heavy consuming demand and car shortage have been the factors tending to maintain the existing high prices in the ground wood market and to force them even higher. No pronounced advances have, however, been noted over those which prevailed last week. Imported ground wood has been scarce and prices have remained well above the $40 mark.

Chemical Pulp

Both imported and domestic grades of chemical pulp are continuing to move actively, producers and importers being well filled up at least until the first of January. Contract shipments are being made as rapidly as the crippled transportation facilities will permit and "fill in" orders continue to come in regularly. Prices have held firm despite the fact that the bulk of contract buying for the current year is over and there is no evidence of an easing up in tone for some time to come.

Old Rope and Bagging

Old rope has eased off a bit during the past ten days, prices having dropped approximately a quarter of a cent a pound on carload quantities. Imports of old rope have been heavy during the past month, and this may account for the slight depreciation. Mixed strings are in good demand by the paper trade, although this has not been reflected in price quotations.

Bagging has fallen off a trifle, especially in the roofing grates, while No. 1 scrap has been maintaining a fairly even keel at prices ranging from 1.10 to 1.25 cents a pound depending upon the packing.

Waste Paper

Considerable anxiety has been expressed by waste paper dealers and packers in recent weeks over the continued depression in waste paper prices in the face of a lively business on the part of paper mills. Manufacturers have attributed their inability to pay higher prices than they are now offering to the car shortage and railroad embargoes. Meanwhile the lower grades of waste paper have declined sharply and even the better grades have lost strength to some extent. This condition is believed to be entirely artificial and temporary. Western paper stock dealers have been able to hold out for better prices, but Eastern merchants, lacking the facilities for storing the lower and bulkier grades, have had no alternative other than to sell at any price offered.

Rags

The old grades of domestic rags have been fairly quiet during the last week, while the new grades have firmed up considerably. Aside from this the situation remains practically unchanged, foreign rags exhibiting a slight improvement, but still being slow to turn over. The price tone has been rather weak during the past month, but dealers look forward confidently to the new year for a substantial increase in business volume.

Twine

Twines continue in fair demand, but as yet no price increases have taken effect. Stocks are generally very low, and dealers believe that when the demand sets in in full force prices will rise to the levels justified by the short jute crop.

The Peninsular Paper Company of Ypsilanti, Mich., manufacturer of cover paper, has made a contribution of $50 to the Vocational Education Committee to complete the text books on Manufacture of Pulp and Paper.

XUM

Market Quotations

Paper Company Securities

New York Stock Exchange closing quotations November 21, 1922:

	BID	ASKED
American Writing Paper Company, pref.	28⅜	30
International Paper Company, com.	50	55 5/6
International Paper Company, pref., stamped	73½	75
Union Bag & Paper Corporation	66	68

Paper

F. o. b. Mill.

Ledgers	10.50	@38.00
Bonds	9.00	@55.00
Writings—		
Extra Superfine	16.00	@35.00
Superfine	14.00	@30.00
Tub Sized	10.00	@15.00
Engine Sized	8.50	@11.00
News—f. o. b. Mill—		
Rolls, contract	3.85	@ 4.00
Rolls, transit	4.00	@ —
Sheets	4.00	@ —
Side Runs	3.25	@ 3.50
Book, Cased—f. o. b. Mill		
S. & S. C.	7.50	@12.00
M. F.	7.00	@10.00
Coated and Enamel	9.00	@14.00
Lithograph	9.00	@14.00
Tissues—f. o. b. Mill		
White, No. 1	.95	@ 1.10
Colored	1.25	@ 2.50
Anti-Tarnish	1.75	@ 2.25
Silver Tissue	—	@ —
Manila	.90	@ 1.00
Kraft—f. o. b. Mill—		
No. 1 Domestic	7.00	@ 7.50
No. 2 Domestic	6.50	@ 6.75
Imported	6.50	@ 7.00
Screenings	3.15	@ 3.40
Manila—		
No. 1 Jute	8.50	@ 9.00
No. 2 Jute	7.75	@ 8.50
No. 1 Wood	4.50	@ 5.50
No. 2 Wood	4.00	@ 4.50
Butchers	4.25	@ 4.75
Fiber Papers—		
No. 1 Fiber	6.00	@ 6.25
No. 2 Fiber	5.25	@ 5.50
Common Bogus	3.50	@ —
Card Middies	4.00	@ 5.00
Boards—per ton—		
News	65.00	@70.00
Straw	—	@ —
Chip	60.00	@ —
Binders' Board	80.00	@90.00
Sgl. Mla. Ll.Chip	70.00	@ —
Wood Pulp	—	@ —
Container	—	@ —
Wax Paper—		
Self Sealing White 28 and 30 lb. basis	11.00	@12.00
Waxed Tissue	1.60	@ 1.80
Glassine—		
Bleached, basis 25 lbs.	All quotations withdrawn	
Bleached, basis 20 lbs.		

Mechanical Pulp

(Ex-Dock)

No. 1 Imported	38.00	@45.00
No. 1 Domestic	36.00	@42.00

(F. o. b. Pulp Mills.)

Chemical Pulp

(Ex-Dock, Atlantic Ports.)

Sulphite (Imported)—		
Bleached	4.50	@ 5.00
Easy Bleaching	3.00	@ 3.25
No. 1 strong unbleached	2.90	@ 3.20
No. 2 Strong unbleached	2.65	@ 3.00
No. 1 Kraft	3.00	@ 3.25
Sulphate—		
Bleached	4.00	@ 4.25

(F. o. b. Pulp Mill.)

Sulphite (Domestic)—		
Bleached	4.75	@ 5.25
Strong unbl'chd.	2.90	@ 3.20
Easy Bleaching Sulphite	3.00	@ 3.25
News Sulphite	2.75	@ 3.00
Mitscherlich	3.00	@ 3.25
Kraft (Domestic)	3.00	@ 3.25
Soda Bleached	4.25	@ 4.50

Domestic Rags

New

Prices to Mill, f. o. b. N. Y.

Shirt Cuttings—		
New White, No. 1	11.50	@12.00
New White, No. 2	6.50	@ 7.00
Silesias, No. 1	7.50	@ 8.00
New Unbleached	9.00	@ 9.50
Washables	4.50	@ 5.00
Fancy	6.25	@ 6.75
Cotton—according to Grades—		
Blue Overall	5.50	@ 6.00
New Blue	4.75	@ 5.00
New Black Soft	5.50	@ 6.00
New Light Seconds	2.75	@ 3.00
O. D. Khaki Cuttings	4.00	@ 4.50
Men's Corduroy	3.00	@ 3.25
New Canvas	7.00	@ 7.25
New Black Mixed	2.50	@ 2.75
Old		
White, No. 1—Repacked	6.50	@ 6.75
White, No. 1—Miscellaneous	5.50	@ 5.75
White, No. 2—Repacked	3.25	@ 3.50
White, No. 2—Miscellaneous	5.50	@ 5.75
St. Soiled White	1.75	@ 1.85
Thirds and Blues—		
Repacked	1.90	@ 2.10
Miscellaneous	1.50	@ 1.60
Black stockings	2.90	@ 3.25
Roofing Rags—		
Cloth Strippings	1.10	@ 1.20
No. 1	1.10	@ 1.20
No. 2	1.00	@ 1.10
No. 3	.80	@ .90
No. 4	.80	@ .90
No. 5A	1.00	@ 1.10

Foreign Rags

New Light Silesias	6.00	nominal
Light Flannelettes	6.75	nominal
Unbl'chd Cottons	7.50	nominal
New White Cuttings	9.50	nominal
New Light Oxfords	6.00	nominal
New Light Prints	4.50	nominal
New Mixed Cuttings	2.00 @	2.50
New Dark Cuttings	1.90 @	2.10
No. 1 White Linens	9.00	@11.00
No. 2 White Linens	6.50	nominal
No. 3 White Linens	5.00	nominal
No. 4 White Linens	3.50	nominal
Old Extra Light Prints	2.00	nominal
Ord. Light Prints	1.75	nominal
Med. Light Prints	1.50	nominal
Dutch Blue Cottons	1.85	nominal
German Blue Cottons	1.60 @	1.70
Ger. Blue Linens	3.50	nominal
Checks and Blues	1.50	nominal
Dark Cottons	1.30 @	1.35
Shoppery	1.00 @	1.05
French Blues	1.75 @	2.00

Bagging

Prices to Mill f. o. b. N. Y.

Gunny No. 1—Foreign	1.00 @	1.10
Gunny No. 1—Domestic	1.00 @	1.10
Wool, Tares, light	1.45 @	1.55
Wool, Tares, heavy	1.40 @	1.50
Bright Bagging	1.10 @	1.25
No. 1 Scrap	1.10 @	1.25
Sound Bagging	.85 @	.95
Manila Rope—		
Foreign	5.75 @	6.00
Domestic	6.00 @	6.25
New Bu. Cut	2.25 @	2.45
Hessian Jute Threads—		
Foreign	2.25 @	2.50
Domestic	2.20 @	2.40
Mixed Strings	.90 @	1.00

Twines

Cotton—(F. o. b. Mill)		
No. 1	.35 @	.37
No. 2	.31 @	.33
No. 3	.37 @	.39
India, No. 6 basis—		
Light	.20 @	.21
Dark	.19 @	.20
B. C., 18 Basis	.41 @	.42
A. B. Italian, 18 Basis	.51 @	.61
Finished Jute—		
Dark, 18 basis	.29 @	.30
Light, 18 basis	.26 @	.27
Jute Wrapping, 3-6 Ply—		
No. 1	.23 @	.24
No. 2	.21 @	.22
Tube Rope—		
4-ply and larger	.15 @	.17
Fine Tube Yarn—		
5-ply and larger	.19 @	.21
4-ply	.20 @	.22
3-ply	.20 @	.22
Unfinished India—		
Basis	.16 @	.17
Paper Makers Twine		
Balls	.13 @	.15
Box Twine, 2-3 ply	.18 @	.19
Jute Rope	.17 @	.20
Amer. Hemp, 6	.33 @	.35
Sisal Hay Rope—		
No. 1 Basis	.15 @	.17
No. 2 Basis	.13 @	.15
Sisal Lath Yarn—		
No. 1	.14 @	.15
No. 2	.11 @	.13
Manila Rope	.18 @	.19

Old Waste Papers

(F. o. b. New York)

Shavings—		
Hard, White, No. 1	4.40 @	4.60
Hard, White, No. 2	3.75 @	4.25
Soft, White, No. 1	3.75 @	3.90
Flat Stock—		
Stitchless	2.65 @	2.70
Over Issue Mag.	2.75 @	2.75
Solid Flat Book	2.45 @	2.50
Crumpled No. 1	2.10 @	2.15
Solid Book Ledger	3.00 @	3.25
Ledger Stock	2.70 @	2.80
New B. B. Chips	1.00 @	1.10
Manilas—		
New Env. Cut	2.50 @	2.60
New Cut No. 1	2.00 @	2.10
Extra No. 1 Old	1.80 @	1.90
Print	1.55 @	1.65
Container Board	1.25 @	1.35
Bogus Wrapper	1.10 @	1.20
Old Krafts, machine compressed Bales	2.15 @	2.25
News—		
No. 1 White News	2.05 @	2.15
Strictly Overissue	1.25 @	1.35
Strictly Folded	1.00 @	1.10
No. 1 Mixed Paper	.80 @	.85
Common Paper	.60 @	.70

CHICAGO

[FROM OUR REGULAR CORRESPONDENT]

Paper

F. o. b. Mill

All Rag Bond	35 @	40
No. 1 Rag Bond	30 @	35
No. 2 Rag Bond	18 @	25
Water Marked Sulphite	10 @	14
Sulphite Bond	9½ @	12
Sulphite Ledger	12 @	14
Superfine Writing	18 @	24
No. 1 Fine Writing	14 @	22
No. 2 Fine Writing	12 @	20
No. 3 Fine Writing	9 @	12
No. 1 M. F. Book	6½ @	7
No. 1 S. & S. C. Book	7 @	7½
Coated Book	8½ @	8.60
Coated Label	8¼ @	8.50
News—Rolls mill	4 @	4½
News—Sheets, mill	4¼ @	4¾
No. 1 Manila	4¾ @	6
No. 1 Fiber	5¼ @	5¾
No. 2 Manila	4½ @	5
Butchers' Manila	4 @	4½
No. 1 Kraft	7 @	7½
No. 2 Kraft	6½ @	7
Wood Tag Boards	4½ @	5
Screenings	3 @	4
Boards, per ton—Plain Chip	All quotations withdrawn	
Solid News		
Manila Lined Chip		
Container Line—85 Test		
100 Test		

Old Papers

Shavings—No. 1 Hard White	4.25 @	4.50
No. 1 Soft Shav.	3.75 @	4.00
No. 1 Mixed	1.85 @	2.00
No. 2 Mixed	1.75 @	1.90
White Envel. Cuttings	4.25 @	4.50
Ledgers and Writings	2.75 @	3.00
Solid Books	2.55 @	2.65
No. 1 Books, light	2.00 @	2.25
Blanks	2.00 @	2.25
Ex. No. 1 Manila	2.40 @	2.60
Manila Envelope Cuttings	2.50 @	2.65
No. 1 Manilas	1.75 @	2.00
Folders News (over issue)	1.40 @	1.50
Old Newspaper	1.35 @	1.45
Mixed Papers	1.25 @	1.30
Straw Clippings	1.25 @	1.50
Binders Clippings	1.25 @	1.50
Kraft	2.40 @	2.60
New Kraft Cuts	2.50 @	2.60
Roofing Stock, f. o. b. Chicago, Net Cash—No. 1	32.00 @	—
No. 2	30.00 @	—
No. 3	28.00 @	—
No. 4	28.00 @	—

PHILADELPHIA

[FROM OUR REGULAR CORRESPONDENT]

Paper

Bonds	.10 @	.60
Ledgers	.15 @	.40
Writings—		
Superfine	.15 @	.20
Extra fine	.12 @	.22
Fine	.20 @	.30
Fine, No. 2	.20 @	.25
Fine, No. 3	.15 @	.20
Book, M. F.	.06 @	.09
Book, S. S. & C.	.08 @	.15
Book, Coated	.08 @	.15
Coated Lithograph	.10 @	.15
Label	.08 @	.15
News	.05 @	.07
No. 1 Jute Manila	.12 @	.13
Manila Sul., No. 1	.08 @	.08½
Manila No. 2	.07½ @	.08
No. 2 Kraft	— @	.08½
No. 1 Kraft	— @	.09½
Common Bogus	.02½ @	.03
Straw Board	67.50 @	70.00
News Board	58.00	
Chip Board	58.00	
Wood Pulp Board (Carload Lots)	1.20 @	1.25
Binder Boards—		
Per ton	80.00	
Carload lots	80.00	
Tarred Felts—		
Regular	48.00 @	50.00
Slaters	54.00 @	56.00
Best Tarred, 1-ply (per roll)	1.35 @	1.50
Best Tarred, 2-ply (per roll)	1.00 @	1.15
Best Tarred, 3-ply	1.50 @	1.65

Bagging

F. o. b. Phila.

Gunny No. 1—Foreign	1.10 @	
Gunny No. 1—Domestic	1.10 @	
Manila Rope	5.25 @	5.75
Sisal Rope	.75 @	.80
Mixed Rope	.75 @	.80
Scrap Burlaps	1.00 @	1.25
Wool Tares, heavy	2.50 @	2.75
Mixed Strings	.75 @	.80
No. 1, New Lt. Burlap	1.75 @	2.00
New Burlap Cuttings	1.75 @	2.10

Old Papers

F. o. b. Phila.

Shavings—No. 1, Hard White	4.00 @	4.25
No. 2, Hard White	3.50 @	3.75
No. 1 Soft White	3.60 @	3.75
No. 2 Soft White	2.00 @	2.25
No. 1 Mixed	1.50 @	1.75
No. 2 Mixed	1.00 @	1.25

(Continued on page 74)

Imports and Exports of Paper and Paper Stock

NEW YORK, BOSTON, PHILADELPHIA AND OTHER PORTS

NEW YORK IMPORTS

WEEK ENDING NOVEMBER 18, 1922.

SUMMARY

News Print .....1,256 rolls
Printing Paper .....175 cs., 39 rolls
Cigarette Paper .....2,828 cs.
Wrapping Paper .....6,820 rolls, 224 bls.
Packing Paper .....254 bls.
Wall Paper .....541 bls.
Hangings .....4 bls., 2 cs.
Photo Paper .....5 cs.
Metal Paper .....12 cs.
Surface Coated Paper .....41 cs.
Drawing Paper .....4 cs.
Filter Paper .....19 cs., 24 bls.
Miscellaneous Paper,
12,136 rolls. 1,755 bls., 211 cs., 5 bdls.

CIGARETTE PAPER

British American Tobacco Company, Laconia, Liverpool, 33 cs.
British American Tobacco Company, Samaria, Liverpool, 20 cs.
De Manduit Paper Corporation, Rochambeau, Havre, 75 cs.
De Manduit Paper Corporation, Paris, Havre, 40 cs.
R. J. Reynolds Tobacco Company, Zarembo, St. Nazaire, 660 cs.
American Tobacco Company, Zarembo, Bordeaux, 2,000 cs.

PRINTING PAPER

J. H. Scott, Finland, Antwerp, 39 rolls.
H. Lipp, by same, 88 cs.
L. A. Consmiller, Volendam, Rotterdam, 90 cs.

NEWS PRINT

National City Bank, Bergensfjord, Kristiania, 128 rolls.
Fernstrom Paper Company, Inc., Monticello, Gothenburg, 46 rolls.
Street & Smith Corporation, Volendam, Rotterdam, 802 rolls.
Chemical National Bank, Stockholm, Gothenburg, 103 rolls.
Bankers Trust Company, by same, 177 rolls.

WRAPPING PAPER

Wilkinson Bros. & Co., Inc., Bergensfjord, Kristiania, 2,792 rolls, 23 bls.
D. S. Walton Co., Monticello, Helsingborg 291 rolls.
Foreign Paper Mills, Hansa, Hamburg, 1,060 rolls.
Peoples Trust Company, Stockholm, Gothenburg, 918 rolls, 27 bls.
Chemical National Bank, by same, 92 bls, 1,451 rolls.
Salmen Paper Company, by same, 116 rolls, 82 bls.
Arkell Safety Bag Company, by same, 112 rolls.
Chatham & Phenix National Bank, by same, 196 rolls.

PACKING PAPER

J. P. Hefferman Paper Company, Stockholm, Gothenburg, 254 bls.

WALL PAPER

National City Bank, Finland, Antwerp, 536 bls.
A. Murphy & Co., Samaria, Liverpool, 5 bls.

PAPER HANGINGS

W. H. S. Lloyd & Co., Vasconia, London, 4 bls., 2 cs.

PHOTO PAPER

Geneart Company of America, Finland, Antwerp, 5 cs.

METAL PAPER

Irving National Bank, Mt. Carroll, Hamburg, 12 cs.

SURFACE COATED PAPER

L. A. Consmiller, Volendam, Rotterdam, 41 cs.

DRAWING PAPER

H. Reeve Angel & Co., Vasconia, London, 4 cs.

FILTER PAPER

H. Reeve Angel & Co., Vasconia, London, 9 cs.
H. Reeve Angel & Co., Berengaria, Liverpool, 6 cs.
J. Manheimer, Rochambeau, Havre, 24 bls.
G. Lueders & Co., Paris, Havre, 4 cs.

PAPER

Parsons & Whittemore, Pres. Harding, Bremen, 1,852 rolls.
Virginia Paper Company, Inc., by same, 360 rolls.
H. Reeve Angel & Co., by same, 273 rolls.
M. O'Meara, by same, 245 bls.
Whiting & Patterson, by same, 191 bls.
New York Tribune, by same, 185 rolls.
C. A. Johnson, Laconia, Liverpool, 4 bls.
P. H. Petry & Co., Mt. Carroll, Hamburg, 5 cs.
Hensel, Bruckman & Lorbacher, by same, 46 cs.
National City Bank, Bergensfjord, Kristiania, 161 rolls.
New York Tribune, by same, 812 rolls.
M. Gottesman & Co., Inc., by same, 18 rolls.
Chemical National Bank, by same, 149 rolls.
Irving National Bank, Algeria, Glasgow, 204 bls.
F. L. Kraemar & Co., Pres. Garfield, London, 7 cs.
Birn & Wachenheim, Rochambeau, Havre, 5 cs.
C. H. Boulin, by same, 41 cs.
Hensel, Bruckman & Lorbacher, Hansa, Hamburg, 14 cs.
J. W. Hampton, Jr., & Co., by same, 5 cs.
American Merchants Shipping Company, by same, 27 cs.
M. M. Cohen, Stockholm, Gothenburg, 27 bls., 120 rolls.
M. O'Meara Company, by same, 3076 rolls, 77 bls.
Chase National Bank, by same, 54 bls., 113 rolls.
Fernstrom Paper Company, Inc., by same, 1,705 rolls.
Blaunelt & Wiley Paper Mfg. Co., by same, 192 rolls, 34 bls.
Great Notch Paper Company, by same, 11 bls., 130 rolls.
Equitable Trust Company, by same, 21 bls.
Central New York Supply Company, by same, 6 bls., 182 rolls.
C. G. Winans, by same, 565 bls., 5 bdls., 683 rolls.
J. P. Hefferman Paper Company, by same, 193 bls.
Wilkinson Bros. & Co., Inc., by same, 175 bls., 542 rolls.
D. S. Walton & Co., by same, 1,249 rolls.
Japan Paper Company, by same, 17 cs.
C. K. MacAlpine, by same, 344 rolls.
Windowphanie Company, Paris, Havre, 22 bls.
De Manduit Paper Corporation, by same, 40 cs.
Whiting & Patterson, by same, 4 cs.

RAGS, BAGGINGS, ETC.

E. J. Keller Company, Inc., Monticello, Hamburg, 114 bls. rags.
Irving National Bank, Algeria, Glasgow, 70 bls. paper stock.
Levine & Rosenberg, by same, 34 bls. paper stock.
S. Silverman, Volendam, Rotterdam, 64 bls. paper stock.
E. J. Keller Company, Inc., by same, 33 bls. paper stock.
International Acceptance Bank, by same, 193 bls. rags.
American Exchange National Bank, by same, 187 bls. baggings, 31 bls. paper stock.
Albion Trading Company, Pres. Garfield, London, 31 bls. rags.
National City Bank, Rochambeau, Havre, 256 bls. rags.
Equitable Trust Company, by same, 231 bls. rags.
W. Schall & Co., by same, 282 bls. rags.
E. J. Keler Company, Inc., Finland, Antwerp, 171 bls. flax waste.
Irving National Bank, Finland, Antwerp, 150 bls. flax waste.
E. J. Keller Company, Inc., Galileo, Newcastle, 89 bls. rags.
Irving National Bank, Hansa, Hamburg, 48 bls. flax waste.
Irving National Bank, Zarembo, Bordeax, 101 bls. new cuttings.
American Woodpulp Corporation, by same, 156 bls. rags.
Katzenstein & Keene, Inc., Belgian, Liverpool, 25 bls. baggings, 96 bls. new cuttings.
Albion Trading Company, Vulcan City, London, 42 bls. rags.
American Exchange National Bank, by same, 380 bls. rags.

OLD ROPE

E. J. Keller Company, Inc., Galileo, Newcastle, 434 bls.
H. P. Reed, Monticello, Hamburg, 76 coils.
Equitable Trust Co., Volendam, Rotterdam, 98 coils.

CASEIN

T. S. Todd, Tuscania, Glasgow, 288 bags.
Kalbfleisch Corporation, American Legion, Buenos Aires, 917 bags.
Attebury Bros., Inc., by same, 334 bags.

WOOD PULP

Castle, Gottheil & Overton, Mt. Carroll, Hamburg, 275 bls., 55 tons.
American Exchange National Bank, Bergensfjord, Kristiania, 150 bls.
Ridder, Peabody & Co., by same, 10,000 bls.
M. Gottesman & Co., Inc., Volendam, Rotterdam, 470 bls.
Johanesson, Wales & Sparre, Inc., Stockholm, Gothenburg, 3,184 bls.
Seggerman Bros., by same, 200 bls.
Price & Pierce, Ltd., by same, 800 bls.
J. Anderson & Co., by same, 125 bls.
Scandinavian American Trading Company, by same, 508 bls.
E. M. Sergeant & Co., by same, 1,658 bls.
R. F. Hammond, by same, 1,508 bls., 300 tons.
Wilson Lyon Company, Inc., Hansa, Hamburg, 1,250 bls., 252 tons.
Hudson Trading Company, Chebanlip, Gothenburg, 2,700 bls.

WOOD PULP BOARDS

Lagerlof Trading Company, Monticello, Kotka, 2,264 bls., 217 tons.
Wilkinson Bros. & Co., Inc., Stockholm, Gothenburg, 24 rolls.

WOOD FLOUR

B. L. Soberski, Bergensfjord, Kristiania, 1,050 bags.

CHARLESTON IMPORTS

WEEK ENDING NOVEMBER 18, 1922.

Katzenstein & Keene, Inc., Salvation Lass, Barcelona, 1,349 bls. bagging.

NEW ORLEANS IMPORTS

WEEK ENDING NOVEMBER 18, 1922.

Castle, Gottheil & Overton, Danzig, Antwerp, 250 bls. rags.

PHILADELPHIA IMPORTS

WEEK ENDING NOVEMBER 18, 1922.

Wood pulp Trading Company, Ltd., Tiradentes, Christiania, 900 bls. wood pulp.
Castle, Gottheil & Overton, National, Hamburg, 1,695 bls. wood pulp.
Castle, Gottheil & Overton, Burgerdyk, Rotterdam, 404 bls. rags, 221 bls. bagging, 575 bls. waste paper.
Castle, Gottheil & Overton, Hoosac, London, 109 bls. waste paper.
Castle, Gottheil & Overton, Manchester Exchange, Manchester, 823 bls. waste paper, 168 bls. rags.
Castle, Gottheil & Overton, Edgehill, Rotterdam, 627 bls. rags.
Castle, Gottheil & Overton, Naperian, Antwerp, 267 bls. bagging.
Katzenstein & Keene, Inc., Breiz Izel, Bordeaux, 50 bls. rags.

BALTIMORE IMPORTS

WEEK ENDING NOVEMBER 18, 1922.

Hudson Trading Company, Chebanlip, Gothenburg, 1,500 bls. wood pulp.
Hudson Trading Company, Nyland, Gothenburg, 6,000 bls. wood pulp.
E. J. Keller Company, Inc., Blydendyk, Rotterdam, 434 bls. rags.
E. J. Keller Company, Inc., Montpelier, Hamburg, 388 bls. rags.
E. J. Keller Company, Inc., West Elcasco, Antwerp, 111 bls. bagging.

BOSTON IMPORTS

WEEK ENDING NOVEMBER 18, 1922.

Castle, Gottheil & Overton, Burgerdyk, Rotterdam, 260 bls. wood pulp.
R. F. Hammond, Arkansas, Christiania, 900 bls. wood pulp, 150 tons.
Katzenstein & Keene, Inc., Nitonian, Liverpool, 155 bls. new cuttings.
Crane & Co., Rapidan, Liverpool, 40 bls. new cuttings.
Eslack Manufacturing Company, by same, 5 bls. new cuttings.
Furness, Withy & Co., by same, 28 bls. paper stock.
G. M. Graves & Co., Chickahoming, Liverpool, 67 bls. bagging.
Crane & Co., by same, 52 bls. new cuttings.
E. Butterworth & Co., Inc., Naperian, Liverpool, 23 bls. rags.
Train, Smith & Co., by same, 34 bls. waste paper.
G. M. Graves & Co., by same, 15 bls. rags.
Crane & Co., by same, 15 bls. new cuttings.
International Purchasing Company, Winefredian, Liverpool, 94 coils old rope.
International Purchasing Company, Naperian, Liverpool, 104 coils old rope.
International Purchasing Company, Mesaba, London, 169 coils old rope.
E. F. Russ & Co., Scythian, Liverpool, 344 bags hide cuttings.
E. Butterworth & Co., Inc., by same, 501 bags hide cuttings.

Felt Test—Lowest Cost per Ton

If you judge felt values, not by what you put into the equipment, but what you get out of it—then you will specify ORR 3 stripe Endless Felts, for ORR felts will produce the lowest cost per ton. They "stand up" under severe usage. Orr durability is acknowledged everywhere. Their strength and long life are as dependable as their reliability and quality.

In the 32 grades of Felts and Jackets we can match your most exacting demands. Tell us the kind of paper you desire to make, and we will send you samples of felts that will economically serve you and help you to produce paper at lowest cost per ton.

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Members New York Cotton Exchange

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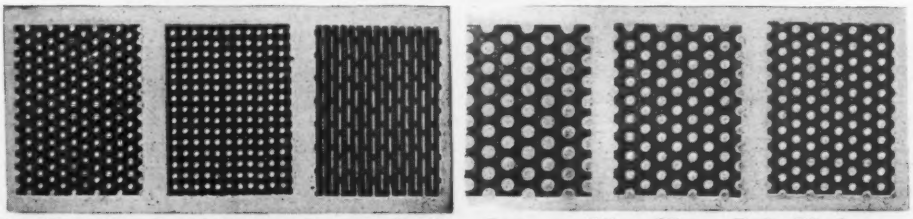

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Miscellaneous Markets

OFFICE OF THE PAPER TRADE JOURNAL,
TUESDAY, November 21, 1922.

BLEACHING POWDER.—Quoting in the neighborhood of 2.00 cents a pound except on sizable quantities, where this price is shaded somewhat, bleach producers continue to feel the pressure of a brisk demand from the paper manufacturing trade. Raw materials are still almost impossible to obtain in sufficient amounts and railroad embargoes hamper the outgoing shipments considerably.

BLANC FIXE.—At the firm price of $80 to $85 per ton, producer's plant, blanc fixe continued to move in regular amounts to consumers considering difficulties in transportation.

CAUSTIC SODA.—While several "outside" brands of this chemical are now being listed at slightly less than the quoted 2.50 cents a pound on 60 per cent basis, the bulk of transactions are being made in this neighborhood and the market has a very firm aspect.

CHINA CLAY.—Clay importers report a satisfying volume of business coming from the paper manufacturing trade, and state that good sized shipments of the English commodity are now en route to this country. Prices hold steady at $15 to $22 per ton for the foreign, $8 to $11 for the domestic washed, and $6 to $8.50 for the unwashed.

CASEIN.—Still in very active demand, and with very little reserve on hand to cope with the needs of coated paper producers, casein continues to maintain its firm position at the average quoted prices of 15.50 to 17.00 cents a pound, New York. Supplies of the Argentine product have been more plentiful in recent weeks, but the flush milk season in South America is just getting into full swing, while production in this country has diminished to a very low ebb with the coming of cooler weather. While the price tone of the market is not expected to ease up to any great extent until next spring, a much firmer undertone is in evidence.

PAPERMAKER'S GLUE.—The grades of hide glue utilized by paper manufacturers for tub sizing continue in fair demand at prices ranging from 13 to 20 cents a pound, factory.

LIQUID CHLORINE.—Five to six cents a pound continues to be the average selling price at which chlorine, in 100-pound cylinders, ton containers or tank car lots, moves to paper manufacturers. The 6.00 cent figure generally holds for quantity orders in the smaller units.

ROSIN.—Rosin prices are still fluctuating with each day's transactions. Production for this season is practically at a close and available stocks will determine the value of the naval store over the winter months. Grades E, F, and G, are now listed at approximately 6.80 cents a pound in barrels of 280 pounds, New York.

SALTCAKE.—Nitre cake and crude salt scarcity still keep producers of saltcake behind on contract shipments. Quotations of $22 to $25 per ton, contract, are prevalent for chrome cake, with spot lots ranging to $26. Acid cake is up around $28 and $29.

SODA ASH.—Registering a fair activity, considering the production difficulties, soda ash still holds at an average of 1.20 cents a pound for the 48 per cent basis grade.

SULPHUR.—Sticking to its firm contract schedule price of $18 to $20 per ton, sulphur has moved in slightly increased volume to the paper trade throughout the past week. Brimstone shipments have not been affected by railroad embargoes as have other chemicals.

SULPHATE OF ALUMINA.—Despite the fact that the scarcity of bauxite and other raw materials justify another advance in the aluminum sulphate market, producers are unable to put further increases into effect owing to the strenuous competition which exists in the market. Western prices on commercial sulphate are considerably lower, ruling at 1.25 or 1.35 cents a pound, while those in the East average 1.50 to 1.75. Iron free is still holding at 2.55 to 2.80.

Market Quotations

(*Continued from page 71*)

Solid Ledger Stock.	2.25	@	2.50
Writing Paper.....	2.00	@	2.25
No. 1 Books, heavy.	2.25	@	2.50
No. 2 Books, light.	1.40	@	1.50
No 1 New Manila.	2.75	@	3.00
No 1 Old Manila..	1.50	@	1.75
Container Manila,..	1.35	@	1.40
Old Kraft.....	2.25	@	2.50
Overissue News....	150	@	1.60
Old Newspaper.....	1.20	@	1.25
No. 1 Mixed Paper.	1.10	@	1.15
Common Paper.....	.80	@	.90
Straw Board, Chip.	.80	@	.90
Binders Bd'. Chip..	.80	@	.90

Domestic Rags—New.
Price to Mill, f. o. b. Phila.

Shirt Cuttings—			
New White, No. 1.	11¾	@	.11¾
New White, No. 2	.06	@	
Silicias, No 1....	.06½	@	.07
New unbleached..	.10¾	@	
Washables	.03¾	@	
Fancy	04¾	@	.05¾
Cottons—according to grades—			
Blue Overall....	.05½	@	.05¾
New Blue.....	.02¾	@	.02¾
New Black Soft.	.06¼	@	.06½
New Light Seconds	.02½	@	.02¾
Khaki Cuttings..	.03½	@	.04¼
Corduroy	.03¼	@	.03¾
New Canvass....	.07½	@	.08
New Black Mixed	.04	@	
Old White, No. 1—			
Repacked	.06	@	.06½
Miscellaneous ...	.04½	@	.04¾
White, No. 2—			
Repacked	.03	@	.03½
Miscellaneous ...	.03	@	.03¼
Thirds and Blues—			
Repacked	200	@	2.25
Miscellaneous ...	1.85	@	1.90
Black Stockings....	2.75	@	3.00
Roofing Stock—			
No. 1.....	1.30	@	1.35
No 2.....	1.20	@	1.25
No 3.....	1.10	@	1.15
No. 4.....	110	@	1.15
No. 5A.....	1.05	@	110
B.....			nominal
C.....			nominal

BOSTON

[FROM OUR REGULAR CORRESPONDENT]

Paper

Bonds	.08	@	.50
Ledgers	.08½	@	.55
Writings	.08	@	.42
Superfine	.16	@	.26
Fine	.15	@	.18
Books, S. & S. C..	.07¼	@	.12
Books, M. F.....	.06¾	@	.09½
Books, coated	.09	@	.15
Label	.08½	@	.13
News, sheets	4.75	@	6.00
News, rolls	4.50	@	5.75
Manilas—			
No. 1 Manila...	$6.00	@	7.00
No. 1 Fiber ...	.06½	@	.07
No. 1 Jute	9.00	@	10.50
Kraft Wrapping ..	.07	@	
Common Bogus ...	3.50	@	3.85

Boards

(Per Ton Destination)

Chip	$60.00	@	65.00
News, Vat Lined..	62.50	@	65.00
Wood, Vat Lined..	70.00	@	
Filled News Board.	62.50	@	65.00
Solid News Board..	65.00	@	70.00
S. Manila Chip..	72.50	@	75.00
Pat. Coated	85.00	@	92.50

Old Papers

Shavings—			
No. 1 Hard White	4.25	@	4.50
No. 1 Soft White	3.00	@	3.50
No. 1 Mixed.....	1.25	@	1.50
Ledgers & Writings	1.75	@	2.00
Solid Books	2.50	@	2.75
Blanks	1.70	@	1.80
No. 2 Light Books.	1.75	@	1.90
Folded News, overissues	28.00	@	30.00
Gunny Bagging ...	.85	@	.90
Manila Rope.....	5.75	@	6.00
Common Paper	.70	@	.80
Old News	.80	@	.90
Old Kraft	2.00	@	2.10

TORONTO

[FROM OUR REGULAR CORRESPONDENT]

Paper

(Mill Prices to Jobbers f. o. b. Mill)

Bond—			
Sulphite	.11	@	.12½
Light tinted.....	.12	@	.13½
Dark tinted.....	.13½	@	.15
Ledgers (sulphite).	—	@	.13
Writing	.09½	@	.12
News, f. o. b. Mills—			
Rolls (carloads)..	3.50	@	
Sheets (carloads).	—	@	4.25
Sheets (2 tons or over)	—	@	4.50
Book—			
No. 1 M. F. (carloads)	9.00	@	—
No. 2 M. F. (carloads)	8.00	@	—
No. 3 M. F. (carloads)	7.50	@	—
No. 1 S. C. (carloads)	9.50	@	—
No. 2 S. C. (carloads)	8.50	@	—
No. 1 Coated and litho.	14.00	@	—
No. 2 Coated and litho.	13.00	@	—
No. 3 Coated and litho.	12.25	@	—
Coated and litho., colored	14.25	@	—
Wrapping—			
Grey	4.75	@	—
White Wrap.....	5.50	@	—
"P" Manila.....	5.75	@	—
No. 1 Manila ..	6.75	@	—
Fiber	6.75	@	—
Kraft, M. F.	8.00	@	—
M. G.	8.15	@	—

Pulp

(F. o. b. Mill)

Ground wood ...	$35.00	@	40.00
Sulphite easy bleaching	60.00	@	70.00
Sulphite news grade.	55.00	@	60.00
Sulphite, bleached.	100.00	@	105.00
Sulphate	70.00	@	—

Old Waste Papers

(In carload lots, f. o. b. Toronto)

Shavings—			
White Env. Cut..	4.00	@	—
Soft White Book Shavings	3.75	@	
White Bl'k News	2.10	@	—
Book and Ledger—			
Flat Magazine and Book Stock(old)	2.55	@	
Light and Crumpled Book Stock	2.40	@	
Ledgers and Writings	2.75	@	
Solid Ledgers....	2.75	@	
Manilas—			
New Manila Cut.	2.10	@	—
Printed Manilas..	1.75	@	—
Kraft	2.50	@	—
News and Scrap—			
Strictly Overissue	1.50	@	
Folded News....	1.50	@	
No. 1 Mixed Papers	1.20	@	

Domestic Rags—
Price to mills, f. o. b. Toronto.

	Per lb.		
No. 1 White shirt cuttings	.10¾	@	
No. 2 White shirt cuttings	.05	@	
Fancy shirt cuttings	.05½	@	
No. 1 Old whites	.04	@	—
Thirds and blues	.02	@	
	Per cwt.		
Black stockings...	2.00	@	
Roofing stock:			
No. 1	1.50	@	
No. 2	1.05	@	
Roofing stock:			
Manila rope.....	6.10	@	
No. 2.....	1.50	@	
Gunny bagging.....	1.00	@	

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WHITE SPRUCE—GROUND WOOD

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300 tons daily

AMERICAN MADE FOR AMERICAN TRADE

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This insures greater freedom from impurities and an exceedingly uniform product.

Prices on M-E pulverized clay may surprise you even considering this additional treatment.

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SITUATION WANTED, 4 cents a word for first insertion and 2 cents a word for each subsequent insertion of same ad. No ad of less than 25 words accepted.

HELP AND MISCELLANEOUS WANTS, and small **For Sale Ads,** 4 cents a word for each and every insertion. No ad of less than 25 words accepted.

When answering advertisements, please address the Box Number given in ad.

Answers can be forwarded care Paper Trade Journal, and will be promptly forwarded without extra charge. All should be sent to the New York office, 10 East 39th street. And all should be addressed as the advertisement directs in every case and not simply to the paper.

All classified ads for the current issue must be in hand not later than Monday preceding date of publication.

HELP WANTED

WANTED—One Machine Tender, one Backtender, one Beaterman on Fourdrinier Machine making book papers. Good locality. Steady employment. Address, Box 5599, care Paper Trade Journal. N-30

WANTED—Experienced Draftsman for Paper Mill in Middle West. Must be familiar with Boiler House, and building designing, also construction. Give all information in first letter. Address, Box 5600, care Paper Trade Journal. N-23

KRAFT PULP FOREMAN—Tour Foreman for sixty ton Kraft Pulp Mill in Middle West. Immediate opening. Give full particulars in first letter. Address, Box 5601, care Paper Trade Journal. N-30

WANTED—Beaterman. Two Machine Mill making Rag Specialties and Colors. Three towers. Steady work. Address, Box 5603, care Paper Trade Journal. N-23

WANTED—One first class Kraft Beater Engineer. Busy job. Good wages, short hours, finest climate in the world. Address, Box 5604, care Paper Trade Journal. N-30

WANTED—First class Millwright. Must be steady, not afraid of heavy work, and capable of caring for all repairs and setting of new machinery in Cylinder Mill. Address, with references and wages expected, the Beveridge Paper Company, Indianapolis, Indiana. N-30

WANTED—Experienced Cylinder Machine Tenders, Backtenders, and Beater Engineers for Roofing Mill located in the East. 3 tours. Wages: Machine tender, 85c per hour; Back Tender, 60c; Beater Engineer, 75c. Send experience and references in first letter. Address, Box 5607, care Paper Trade Journal. N-23

WANTED—Cylinder Machine Tender, accustomed to Specialties. Good wages to competent man. Married man preferred. Address, Box 5574, care Paper Trade Journal. N-23

WANTED—Experienced man to install waxing plant abroad. Good salary and expenses paid both ways. About one year's service. Address, Box 5577, care Paper Trade Journal. N-16

WANTED—Superintendent for six machine Tissue Mill, going into the manufacture of Twisting and Colored Tissues. Must be high grade man, capable of producing quality paper. First class mill. State experience and give reference in first letter. Address, Box 5593, care Paper Trade Journal. N-23

SALESMAN WANTED with Established Trade in paper, paper boards or twine in or adjacent to New York City. Address, Great Notch Paper Co., Inc., 101-103 Varick Street, New York. D-14

WANTED at once. Machine tender on light weight specialties. 8-hour shift. Address, Box 5625, care Paper Trade Journal. N-23

HELP WANTED

WANTED—Experienced finishers to tie pasted board and fibre shipping containers. Steady work and good pay. Address, Box 5620, care Paper Trade Journal. N-23

TWO (2) Beater Engineers for two (2) machines (Container mill) at 65c per hour. Two (2) tours. Located Miami Valley, adjacent to Cincinnati. Address, Box 5621, care Paper Trade Journal. N-23

WANTED—Tour boss. Eight-hour day, for mill in Canada, making board, book, writings, manillas, etc. Must be experienced and able to handle help. Reply with full particulars as to experience, etc. Address, Box 5622, care Paper Trade Journal. N-23

WANTED—A man to sell beater engine roll bars and bed plates, also machine knives to paper mills. State experience and salary desired, and give references. Address, Box 5623, care Paper Trade Journal. D-7

WANTED—Two Fourdrinier machine tenders, two back tenders, two third hands for new two tour mill. Married men preferred. Address, Box 5624, care Paper Trade Jounal. N-30

WANTED—First class all around Finisher. Experienced on all styles of finishing better grades of paper, also on trimming press. None but steady, sober man need apply. Address, Box 5618, care Paper Trade Journal. N-30

SITUATIONS WANTED

A MAN OF EXPERIENCE, capable of assuming management, or other executive's position, would like connection with Mill where Investment can be made. Address, Box 5587, care Paper Trade Journal. D-7

WANTED—Position by a man with years of valuable experience in paper mills making about all grades of paper. Know the manufacturing details, competent executive, familiar with raw stocks, sales ability. Correspondence solicited with mill officials looking for an assistant on whom they can load the detail, and know it will be handled expeditiously and satisfactorily. Address, Box 5557, care Paper Trade Journal. N-23

YOUNG MAN having had several years' mill office experience, desires to connect with new organization as assistant to superintendent where there is good opportunity for advancement. Can furnish A-1 references as to ability. Address, Box 5495, care Paper Trade Journal. N-23

YOUNG LADY, 22, holding position at present as bookkeeper and general office manager with a well known retail paper and bag concern. Has been with them for the past years, but desires to make a change with larger concern. Unquestionable references as to ability and general knowledge of retail paper line. Address, Box 5484, care Paper Trade Journal. D-7

BOSS FINISHER; thoroughly experienced on all grades of paper, having had several years' experience as Boss Finisher, also charge of cutters and calenders. Best of references furnished. Address, Box 5572, care Paper Trade Journal. N-30

SULPHITE SUPERINTENDENT—Several years' satisfactory service in present position, desires change. Capable of securing maximum quality production on bleached and unbleached stock. Address, Box 5578, care Paper Trade Journal. N-23

WANTED—Position as night or day ground wood pulp foreman, by young married man, 33 years old. 14 years' experience; Canada or United States. Address, Box 5580, care Paper Trade Journal. N-23

PAPER SALESMAN: New York City, who can produce large amount of business, would like connection with Paper House, or organization, having good mill facilities. Drawing account on commission basis. Address, Box 5596, care Paper Trade Journal. tf.

SITUATIONS WANTED

MAN with Executive Ability desires position as mill manager. Years of experience in paper manufacturing. Expert in sales, purchasing, cost, accounting and office supervision. Address, Box 5579, care Paper Trade Journal. N-23

SUPERINTENDENT of ability with many years of experience open for position in Felt Roofing Mill. Guarantee satisfaction. References if necessary. Address, Box 5584, care Paper Trade Journal. N-23

A MAN of experience in Traffic Department Paper Mill desires position. Address, Box 5586, care Paper Trade Journal. D-7

EXPERIENCED BUYER for paper mill, open for engagement. Address, Box 5585, care Paper Trade Journal. D-7

WANTED—Twelve years' experience in Commercial, Construction, Pulp and Paper Accounting and Auditing. Age 34 years. Desires position in Canada or East. Anxious to change for position with better prospects. Highest references. Address, Box 5626, care Paper Trade Journal. N-23

MANAGER: Superintendent of ability, 40 years of age, ten years as manager and superintendent. Practical in all branches of mill. Best of references, wishes connections with good container or box board mill after January 1st. Address, Box 5627, care Paper Trade Journal. D-7

MASTER MECHANIC with twelve years' experience in papers. A first class machinist and millwright and up in all mill repairs. Can handle men and is not afraid of work. References. Address, Box 5628, care Paper Trade Journal. D-7

POSITION WANTED by an up-to-date Beaterman. Either wood or rag stock. Address, Box 5629, care Paper Trade Journal. N-23

EXECUTIVE with ten years' practical paper mill experience, at present located, would consider a connection as salesman either for a pulp mill direct or jobber. Enjoys a wide acquaintance among the trade and is familiar with all grades of pulp. A-1 references. Address, Box 5630, care Paper Trade Journal. N-23

A SALESMAN with highest references able to produce best quality of business in the South selling paper and paper products of all kinds with great success, having been with his present firm for over 10 years giving A-1 satisfaction; having real reasons for desiring change. If you want real business that pays in the South, "Florida" included, write at once. Address, Box 5631, care Paper Trade Journal. N-23

WANTED—Man with executive ability desires position as mill manager. Knows the manufacturing details as well as accounting and office supervision. Address, Box 5632, care Paper Trade Journal. N-30

CHEMIST AND CHEMICAL ENGINEER with previous experience in Sulphite and Paper Mills, is open for engagement. Now employed. Good references. Address, Box 5475, care Paper Trade Journal. D-7

PULP AND PAPER MILL EXECUTIVE

Young man, 38, College trained, with 15 years' experience in the Industry, the last twelve years in executive positions, wishes connection with large concern as Technical Director, Manager or General Superintendent.

Specialties: Sulphite Pulp, Sulphate Pulp, Soda Pulp, Kraft Papers and Book Papers.

Have most successful record and best of references. Address, Box 5614, care Paper Trade Journal. N-23

XUM

SITUATIONS WANTED

PULP AND PAPER CHEMIST—Technical education, with several years' experience in mills using both soda and sulphite process, including also paper testing, is open for engagement. Thoroughly qualified to assist in measures seeking efficiency and elimination of wastes in mill practice or to undertake experimental and research work. Address, Box 5633, care Paper Trade Journal. N-23

SUPERINTENDENT of ability desires to make a change. Experienced on all grades of fine Papers, Bond, Ledger, Book, Kraft, Waxing, Manilas, and other Grades. Address, Box 5547, care Paper Trade Journal. D-21

BOOKKEEPER, office man or inside salesman. Position desired by man long experienced in the Paper and Publishers Line. References. Address, Box 5609, care Paper Trade Journal. N-30

SUPERINTENDENT open for position. 20 years' experience in the manufacture of all the better grades of combination and container board. Can get quality and production. Thoroughly familiar with repairs, maintenance and operation of every department of mill. Can furnish the very best of references. Address, Box 5611, care Paper Trade Journal. D-7

MECHANICAL SUPERINTENDENT or master mechanic open for position. Twenty years' experience. Can furnish best of references. American, thirty-nine years old and married. Can handle help and get results. Address, Box 5612, care Paper Trade Journal. N-30

FOR SALE

FOR SALE—Two Potdevin Glassine Bag Machines. Perfect condition. Price reasonable. Write for further information. Address, The Peerless Mfg. Co., Norristown, Pa. tf

BALE PRESS—Logemann 6 M. T. Belt driven. First class condition. Agar Manufacturing Corporation, Bush Terminal, Brooklyn, New York. N-23

CARS FOR SALE

Fine sturdy standard-gage cars, placed upon the market because of a change in our manufacturing conditions which renders them unnecessary to us. All are in M.C.B. —interchange condition for use on any road.

50—Box—60,000 lbs. capacity.

30—Box—60,000 lbs. capacity —roofs removed for pulpwood service.

60—Racked for pulpwood or coke—80,000 lbs. capacity.

40—Gondola, flat bottom, 80,000 lbs. capacity.

Present car shortage is increasing rapidly and is expected to reach higher figures than anything since 1916. Cars are offered subject to prior sale, and immediate action is suggested.

Address Box, 5583
Care of Paper Trade Journal
N-23

FOR SALE

FOR SALE—One New Brennen Folder, 60x 50. One Gould Suction Pump, used, size 8x10. Two Hoffman Couches, 78"x16". One sixteen roll backstand and shafts for 70" cutter. One Lannoye No. 1 Paper Pulper. Address, Box 5564, care Paper Trade Journal. N-23

FOR SALE—Three cylinder moulds in first class condition, outside journals 3½" diameter. Could be fitted for roller bearings. Clark Mfg. Co., 79 Merrick Avenue, Holyoke, Mass. N-23

FOR SALE—6 Farnum Drives. Complete Triple-Deck frames for 44 Dryers. Will arrange terms to suit. Chesapeake Paper Board Co., Baltimore, Maryland. tf

FOR SALE—One super calender 66"-9 stack with motor drive. Outfit practically new and in first class condition. Latest type, a big bargain. Also 52" Wet paster. Address, Box 5634, care Paper Trade Journal. N-30

WE WANT TO SELL One No. 10 Hoe Cutter and Creaser; two (2) Color Printing Press in A-1 condition. Will guarantee and sell for cash only. Two No. 4 Miehle Printing Presses, one (1) color. Address, W. E. Shuttleworth & Co., 248 Greenwich St., New York City, N. Y. N-23

FOR SALE—Hess Ives tint photometer, complete with cabinet, lamp and motor; first class condition; at half original cost, due to discontinuance of research work. Address, Box 5636, care Paper Trade Journal. N-23

FOR SALE—Deane Duplex Fire Pump, 14x 8¼x10, capacity 600 gallons per minute. Address, Box 5482, care Paper Trade Journal. tf

UNCAS PAPER MILL FOR SALE

By order of the Superior Court of Connecticut there will be sold on the premises at Norwich, Connecticut, at 2 p. m. on Monday, December 4, 1922, the property formerly of The Ironsides Board Corporation and producer of the Uncas Board, comprising paper mills, warehouses, oil tanks, water tank, 8 tenement houses with 14 tenants, and a manager's residence. The land has a frontage of over 1,400 feet on West Thames St. and over 1,000 feet frontage on the Thames River with wharf accessible for steamers plying between Norwich and New York and for vessels carrying coal, oil and material for mill. The Central Vermont Railroad with sidings passes through the property and the N. Y., N. H. & H. Railroad depot is within one mile.

Equipment includes: 1 Black & Clawson 80-inch 5-cylinder paper making machine, 1 Pusey & Jones 112-inch 5-cylinder paper making machine and 1 Pusey & Jones 120-inch 6-cylinder paper making machine, with a full complement of cylinder mould squeeze rolls, presses, dryers, calendar stacks, winders, pumps, screens, cutters, pasting machine and other attachments, beaters, stuff chests, hoisters, elevators, fully equipped machine shop, large steam plant (with boilers equipped to burn oil) dynamos, generators, scales, office equipment and a large assortment of tools, spare parts and accessories.

10% of price to be paid at sale, balance on delivery of deed.

Gilbert S. Raymond, Committee.

For further particulars inquire of Norwich Savings Society, Norwich, Conn. N-30

MISCELLANEOUS

WANTED TO BUY—Direct from manufacturers, for drop shipment: All Tissue culls, 1 M & 2 M Sheet Rolls of No. 1 Tissue Paper, Pulp Pie Plates, Shirt Boards and any kind of jobs in Counter or Jumbo Rolls of Wrapping Paper. Address, Young Selling Organization, P. O. Box 871, Norfolk, Va. N-23

ONE HAMBLET duplex cutter, 74" or over. State particulars and price. Address, Box 5637, care Paper Trade Journal. N-23

MISCELLANEOUS

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can fill your requirements in used or new machinery.

THE SHARTLE BROTHERS MACHINE CO.
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REBUILT and new electric motors, generators and transformers, all standard makes, sold, bought and exchanged. Our rebuilt motors stand every test of new motors, 8,000 always in stock. Send for stock list. Write what you want or have to sell. Fuerst Friedman Co., Cleveland, Ohio. D-7

WANTED—To buy tissue paper shredding machine. Give full particulars. The Paper Novelty Co., Green Bay, Wisconsin. D-7

WANT TO PURCHASE Paper or Cardboard Business. Would consider a partnership. Address, Box 5639, care Paper Trade Journal. N-23

Rebuilt Paper Mill Machinery

IN STOCK AND GUARANTEED

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FOURDRINIER TISSUE MACHINE—One 68".
FOURDRINIER PARTS—Pusey & Jones 112" 100" equipped with new Century Shake. 96" Kutter Trowbridge.
PRESS PARTS FOR PAPER MACHINES—Pusey & Jones bell crank housings and Black & Clawson swing arm housings. Press rolls 20"x88".
DRYERS—Four 48"x11". One 36"x80". Two 30" x84". Two 36"x74". Four 48"x72". Four 48" x68". One 84"x67". Eleven 42"x 66". Eight 36"x62". Two 36"x48". Four 20"x39".
CHILLED CALENDERS—One 86" six roll. One 82" five roll. One 66" five roll. One 58" five roll. One 54" five roll.
SLITTERS AND WINDERS—One 120" Warren. One 108" Kidder. One 110" two drum Moore & White winder. One 82" Langston. One 46" Langston. One 40" Kidder.
BEATERS—Three N. & W. 72"x42". One Holyoke 54"x60" equipped with four Tyler washers. One Dilts 62"x50" iron tub. One Jones 62"x52". One Dillon 60"x48". Two Emerson 54"x60". Three Downingtown 54"x42" iron tub. One Jones 42"x38". Seven Horne 36"x36". One N. & W. 36"x26". Two No. 2 Claflins, Two No. 1 Claflins.
JORDANS—One Appleton Wagg Majestic. Two No. 2 Dillon Improved. One Large Horne. Two Monarch. One Jones Standard. One Pope brushing.
SCREENS—One 12 plate. Two 8 plate open side Packer. Two 6 plate. Three White auxiliary and one Moore & White auxiliary. One single cylinder Wandel.
STUFF PUMPS—Deane triplex 9"x8". Goulds triplex 8"x12". Goulds triplex 6"x12". Beloit duplex 6"x14". Twelve 5" post.
REVOLVING SHEET CUTTERS—One 82", 62" and 48" Clark. Four 60" Hamblets. Four 60" Finlays. One 50" Hamblet diagonal.
REAM CUTTERS—Two 48" Acme. One 44" Holyoke Seybold.
SUPER CALENDERS—One 52", one 45", one 42", one 36" Holyokes.
WET MACHINES—Four 72" Bagley & Sewall hydraulic. One 58" Noble & Wood.
One 50" Farrel Board Calender.
One Manistee Hog Chipper.
One Rythor & Pringle Shredder.

We have a large number of pumps and over five hundred calender, press and couch rolls in stock.

FRANK H. DAVIS COMPANY
175 Richdale Avenue, Cambridge 40, Mass.

XUM

MISCELLANEOUS

PROPOSALS FOR THE SALE OF ELECTROTYPE DROSS, PAPER SHAVINGS, LEATHER SCRAPS, ETC.

Government Printing Office,
Washington, D. C., November 6, 1922.

Sealed proposals will be received at this office until 2 o'clock p. m., December 4, 1922, for the disposal and sale of Electrotype Dross, Paper Shavings and Leather Scraps from bindery, Old Roller Composition, Refuse Wood, Empty Barrels, and Sawdust which may accumulate, and for the removal of ashes and débris from the Government Printing Office during the six months beginning January 1 and ending June 30, 1923. The right to reject any and all bids and to waive defects is reserved. Detailed specifications of the estimated quantities to be sold, accompanied by blank proposals and giving regulations with which bidders must comply, may be obtained by addressing

GEORGE H. CARTER,
Public Printer

MISCELLANEOUS

WANTED—A silicate pasting machine, suitable for combining container board. Give specifications and price. Address, Box 5635, care Paper Trade Journal. N-30

WE WANT TO BUY One 2-color Miehle Printing Press. Must be in first class condition. Address, W. E. Shuttleworth & Co., 248 Greenwich Street, New York City, N. Y. N-23

A LOS ANGELES manufacturing concern, equipped with power and paper cutting machines, located on a spur track in the center of the manufacturing district, and employing both men and women, desires to assemble and pack light merchandise. Can also attend to shipping and billing, or will store goods, if desired. Address, Box 5638, care Paper Trade Journal. N-23

MISCELLANEOUS

WANTED

OLD established paper specialty manufacturing plant with manufacturing and selling facilities would like to take on an additional line that would show sales volume, either on a royalty basis or to be purchased outright. Processes for treatment of paper or patented articles of merit will be given consideration. Address P. O. Box No. 776, Philadelphia, Pa. N-23

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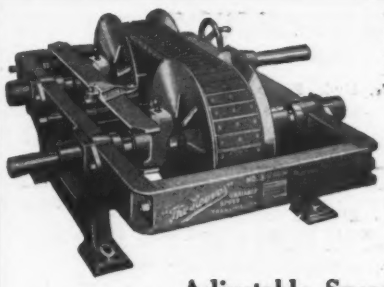

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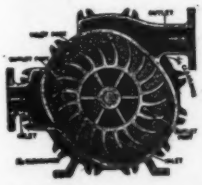

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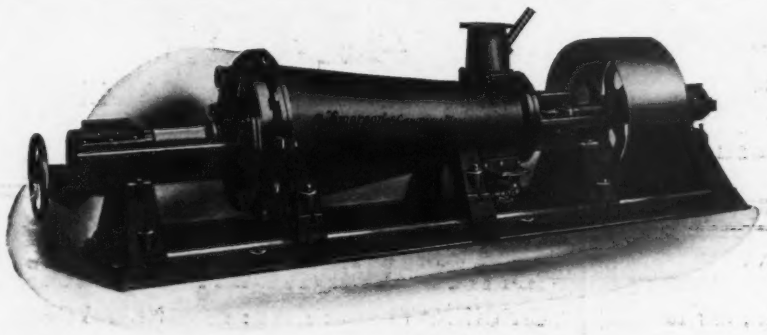

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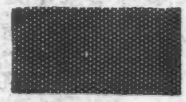
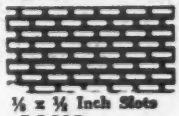


.065 Inch Round



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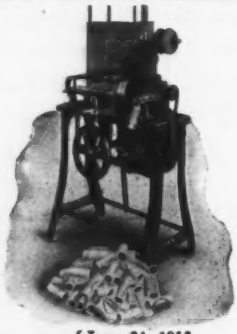

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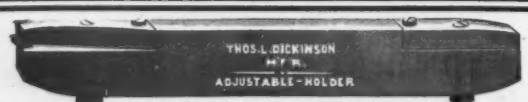

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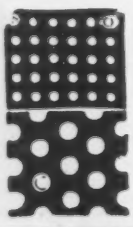

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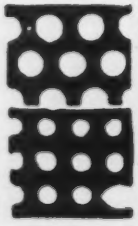

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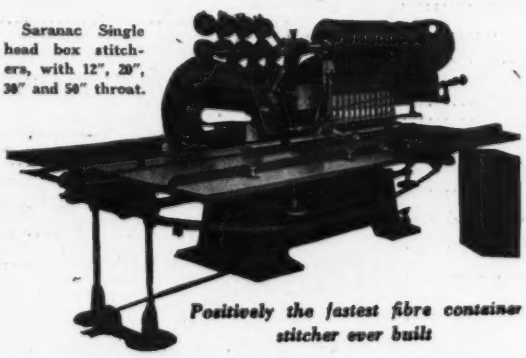

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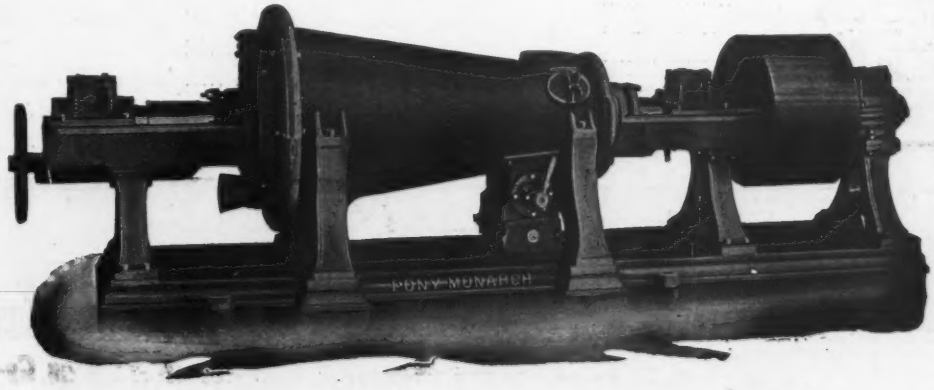

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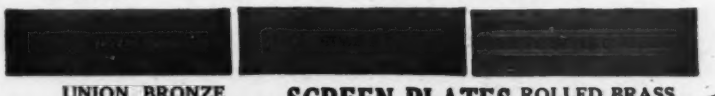

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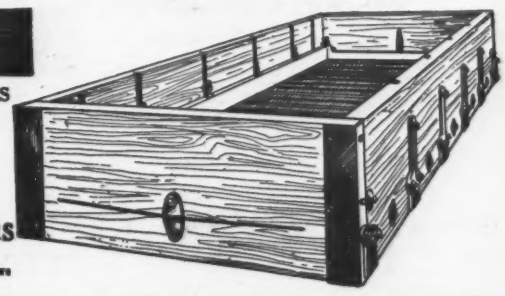

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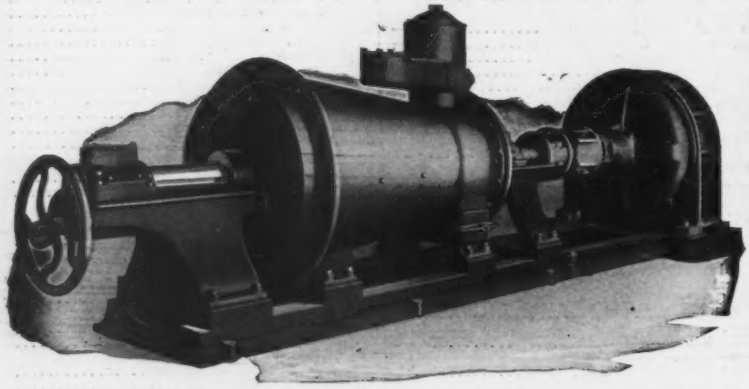

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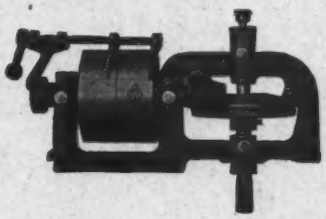

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